Appeal Nos. 2015-1251 and 2015-1253

United States Court of Appeals

for the

Federal Circuit

SIMPLEAIR, INC.,

Plaintiff-Appellee,

– v. –

SONY ERICSSON MOBILE COMMUNICATIONS AB,

Defendant,

GOOGLE INC.,

Defendant-Appellant.

SIMPLEAIR, INC.,

Plaintiff-Appellee,

– v. –

GOOGLE INC.,

Defendant-Appellant,

MOTOROLA MOBILITY LLC, SONY ERICSSON MOBILE COMMUNICATIONS (USA), INC., MICROSOFT CORPORATION,

Defendants.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, CASE NOS. 2:11-CV-00416-JRG AND 2:13-CV-00587-JRG, J. RODNEY GILSTRAP, UNITED STATES DISTRICT JUDGE

NON-CONFIDENTIAL BRIEF FOR DEFENDANT-APPELLANT

CHARLES K. VERHOEVEN
CARL G. ANDERSON
BILL TRAC
QUINN EMANUEL URQUHART & SULLIVAN, LLP
50 California Street, 22nd Floor
San Francisco, California 94111
(415) 875-6600

DARYL JOSEFFER
KING & SPALDING
1700 Pennsylvania Avenue, NW, Suite 200
Washington, DC 20006
(202) 737-0500

ADAM CONRAD
KING & SPALDING
100 North Tryon Street, Suite 3900
Charlotte, North Carolina 28202
(704) 503-2600

April 3, 2015

CERTIFICATE OF INTEREST

Counsel for Defendant-Appellant certifies the following:

1. The full name of every party or amicus represented by the undersigned counsel in the above-captioned appeal is:

Google Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Google Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

Google Inc. is a publicly traded company, has no parent corporation, and no publicly held company owns 10 percent or more of Google's stock.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or are expected to appear in this court are:

Haynes & Boone: John R. Emerson; Phillip B. Philbin; Donald E. Tiller
Kilpatrick Townsend & Stockton, LLP: Alton Absher, III; Jessica L. Hannah (no longer with firm); Scott E. Kolassa; Russell A. Korn; Mitchell G. Stockwell; E. Danielle Thompson Williams (no longer with firm)
King & Spalding LLP: Adam M. Conrad; Daryl L. Joseffer
Charles K. Verhoeven; Carl G. Anderson; Bill Trac
Wilson Robertson & Cornelius PC: Jennifer P. Ainsworth

Dated: April 3, 2015

By: /s/ Charles K. Verhoeven

Charles K. Verhoeven
Carl G. Anderson
Bill Trac
QUINN EMANUEL URQUHART & SULLIVAN, LLP
50 California Street, 22nd Floor
San Francisco, CA 94111
(415) 875-6600
(415) 875-6700

Attorneys for Defendant-Appellant Google Inc.

TABLE OF CONTENTS

Page

CONFIDENTIAL MATERIAL OMITTED

The materials omitted from pages 13, 59-62 brief describe SimpleAir's confidential licensing information. The material omitted from page 56 describes Google pricing information. The materials omitted from pages 63 and 65 of the brief describe usage figures for Google and Microsoft services.

TABLE OF AUTHORITIES

Page(s)

Cases

Statutes

STATEMENT OF RELATED CASES

In the United States District Court for the Eastern District of Texas: (i) Appellee SimpleAir, Inc. asserts the patent at issue in this appeal, U.S. Patent. No. 7,035,914, against Amazon.com, Inc., Case No. 2:14-cv-00679; and (ii) Appellee SimpleAir, Inc. asserts U.S. Patent Nos. 8,572,279 and 8,601,154, both continuations of the ’914 patent, against Appellant Google Inc. and YouTube LLC, in consolidated cases Nos. 2:13-cv-00937 and 2:14-cv-00011.

STATEMENT OF JURISDICTION

This is an appeal from a judgment of patent infringement and validity entered on February 10, 2014 and a judgment as to damages entered on May 13, 2014. Jurisdiction was based upon 28 U.S.C. § 1338(a). A notice of appeal was filed on January 7, 2015. This Court has jurisdiction pursuant to 28 U.S.C. § 1292(c) & 1295(a)(1).

STATEMENT OF THE ISSUES

1. Whether under the legal standard for indefiniteness set forth in *Nautilus*, the terms “a data channel” and “a transmission gateway” render the claims indefinite?

2. In the alternative, whether the district court erred in construing the phrases "whether said devices are online or offline from a data channel associated with each device" and "parsing said data with parsers," and whether under correct constructions Google is entitled a judgment of no infringement as a matter of law?

3. Whether the judgment of infringement should be reversed for failure to provide evidence of joint infringement, where a step of the asserted method claims is performed by third-party radio transceiver chips in mobile devices, and SimpleAir offered no evidence that Google is involved with the hardware or software for the accused chips?

4. Whether the district court should have excluded SimpleAir's per-unit-royalty and settlement theories of damages, or granted JMOL, where (a) the first theory conflated market willingness to pay with price, and assumed a baseline 50-50 profit split, revised without basis to 70-30, and (b) the second theory was based on a settlement with co-defendant Microsoft far removed from the context of the hypothetical negotiation, and used calculations relying on speculative leaps unsupported by evidence?

STATEMENT OF THE CASE

Google appeals a judgment in a patent case based on a partial jury verdict finding infringement and validity, and a subsequent verdict by a second jury awarding $85 million in royalties.

The patent in suit, U.S. Patent No. 7,035,914, claims a method for broadcasting a notification from online information sources to remote devices. SimpleAir accused all messages sent through Google's cloud messaging systems to mobile devices. Google provides a system of distributed servers that handles messages sent from first-party and third-party servers that are intended for delivery to third-party devices, for example smartphones and some tablets.

The United States District Court for the Eastern District of Texas held the claims definite under the "insolubly ambiguous" standard subsequently overruled in *Nautilus*. Under the new governing standard the claims are indefinite. The district court also erred in construing the claims, allowing the patentee SimpleAir to argue infringement by methods not disclosed in the patent as originally filed in 1996 and therefore outside the scope of the claims. Under proper constructions, Google does not infringe as a matter of law.

Separately, the infringement verdict is contrary to governing law on joint infringement. The claimed method requires that both Google servers and third-party "receiver" chips within mobile devices each perform certain recited steps. The chips are built, programmed, owned, and operated by independent third parties. There is no evidence that the chips performing the recited step are under Google's direction or control. Google does not infringe.

The damages verdict cannot stand for several reasons. SimpleAir's original per-unit-royalty theory relied on an incorrect use of a calculated "market willingness to pay" as the price for the accused technology, as well as an assumed baseline 50-50 profit split, as prohibited by this Court's recent opinion in *VirnetX*. Separately, shortly before trial, co-defendant Microsoft settled and SimpleAir disclosed a new damages theory based on that settlement. The settlement theory was based on payments and terms driven by litigation concerns, and far removed from the date and context of the hypothetical negotiation. Furthermore, its calculations relied on multiple speculative leaps.

STATEMENT OF FACTS

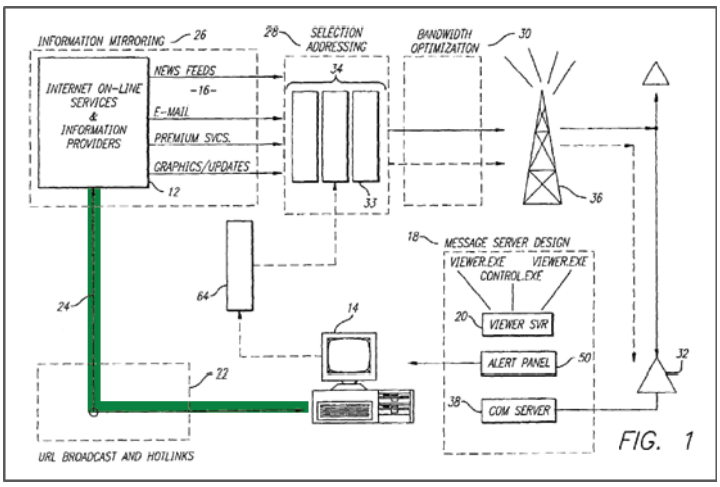
I. U.S. Patent No. 7,035,914

SimpleAir asserted U.S. Patent No. 7,035,914 and its parent, U.S. Patent No. 6,021,433, against Google, Microsoft Corporation, and numerous smartphone manufacturers (collectively, "Defendants").

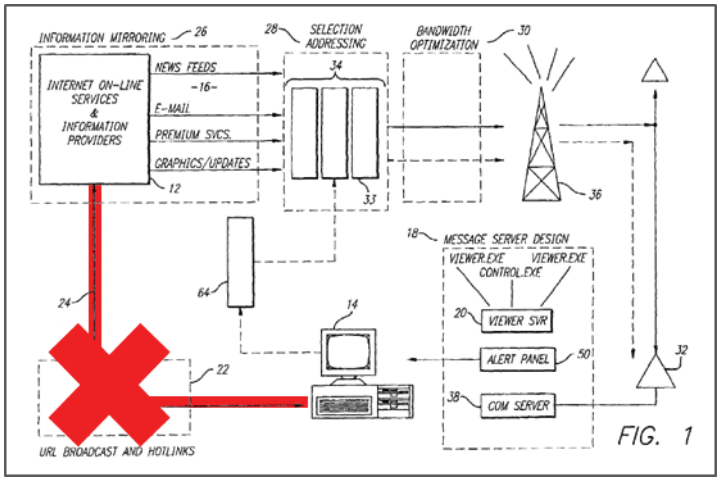
A. The Specification

The '914 patent claims priority to January 26, 1996. A171. At that time, it was common for computer users to connect to the Internet or some other online service via a modem and telephone line, and to disconnect when the dial-up session was completed. A206 7:26-30. When disconnected, the computer could not receive information from online sources.

As shown in Figure 1, a personal computer 14 could access online information sources 12 via a modem, TCP/IP or LAN-type connection 24. The applicants sought a way for a computer to receive notifications from online sources "even while it is off-line." A206 7:4-9. The patent states "present invention [] provides a system and method for data communication connecting on-line networks with on-line and off-line computers." A203 2:51-54.



"online"



"offline"

A173 (highlighted).

The proposed solution uses a secondary network, preferably a paging network, to send notifications though an alternative communication path. A203 2:50-56; A207 9:15-25; A175-77 Figs. 3(a)-3(c). Appropriately constructed notifications can be "wirelessly broadcast to wireless receiving devices which are attached to computing devices." A171 Abstract; A203 2:61-66. The receivers then notify the computers of the receipt of a notification, whether the computers are online or offline. A203-04 2:50-3:5.

In Figure 1, the alternative communication path for notifications runs clockwise from the online sources at the top left to the computer shown at bottom center. Data feeds 16 from information sources 12 are transmitted to a central broadcast server 34. The central broadcast server parses the data, which is then transmitted through gateways (unlabeled) to a wireless carrier 36. The processed data is wirelessly broadcast to receivers 32. The receiver notifies the computer 14 of receipt of the processed data, whether the computer is online or offline. A203 2:50-3:5; A205 6:38-40; A206 7:54-67. Thus, the alternative communication path (highlighted below) "connect[s] online information sources 12 with on- and off-line computers, such as personal computer 14." A205 5:30-33.

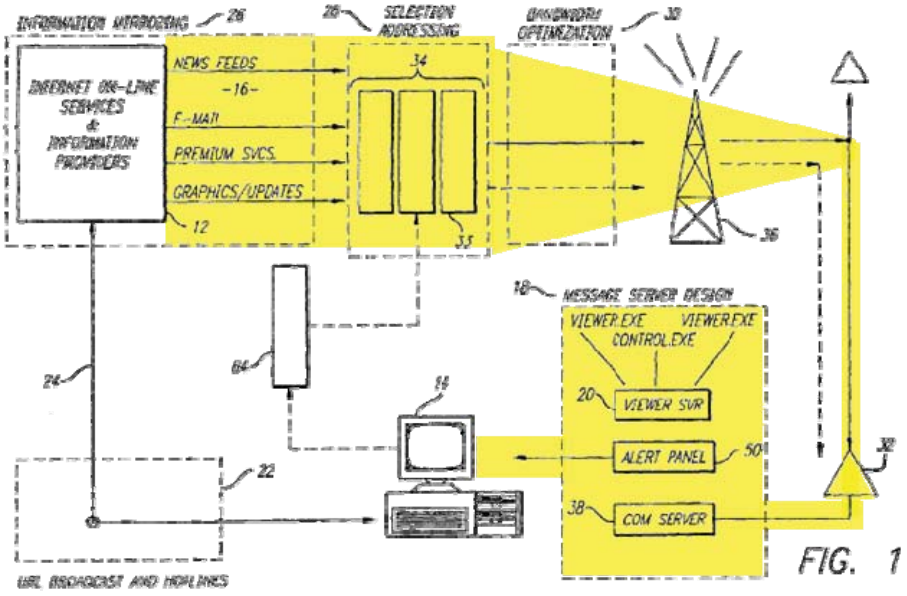
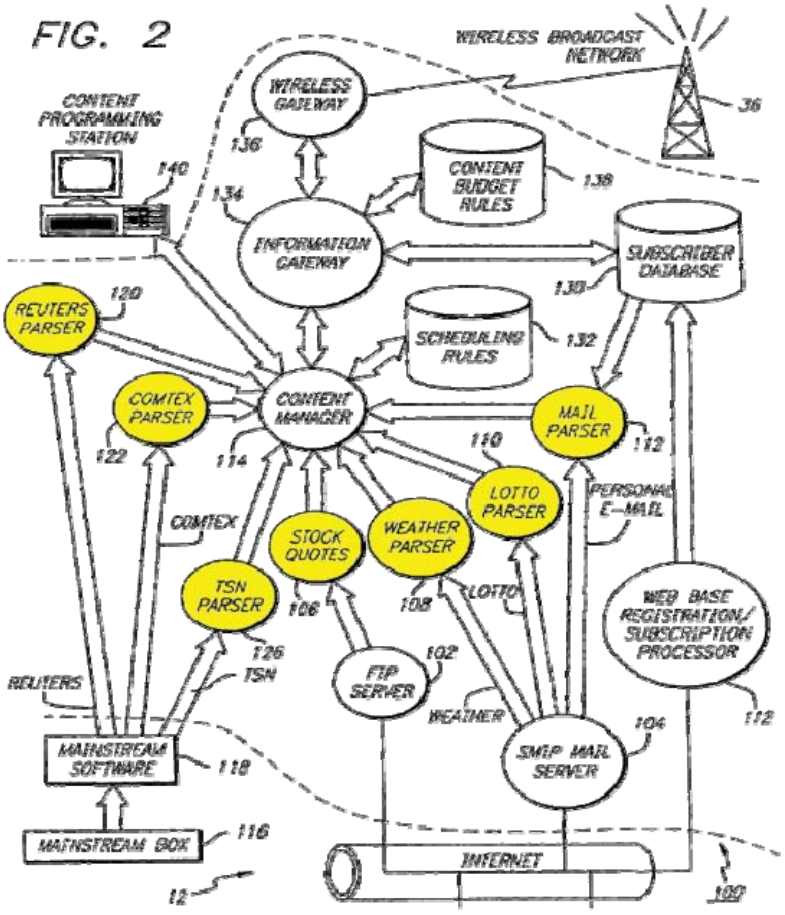


FIG. 1

A173 (highlighted).

Furthermore, the purported invention transmits "data parsed from a plurality of incoming data feeds 16 from existing information sources 12." A205 6:38-40. As shown in Figure 2, data feeds from a variety of sources are processed by corresponding parsers. The invention uses multiple parsers to handle the differing types of information from these sources, such as the stock quote parser 106, weather parser 108, lotto parser 110, mail parser 112, or parsers for Reuters 120, COMDEX 122 and TSN 126. A206 8:1-25.



A174 (highlighted).

After parsing, data is sent to the information gateway 134, and then is passed to a wireless gateway 136. The wireless gateway prepares the data for transmission over a wireless broadcast network 36. A207 9:15-21.

B. Claim 1

Independent claim 1 and dependent claims 2, 3, 7, and 22 are asserted. Claim 1 recites:

> A method for transmitting data to selected remote devices, comprising the steps of:
>
> transmitting data from an information source to a central broadcast server;
>
> preprocessing said data at said central broadcast server, further comprising the step of:
>
> parsing said data with parsers corresponding to said central broadcast server;
>
> transmitting said data to an information gateway for building data blocks and assigning addresses to said data blocks;
>
> transmitting said data blocks from said information gate-way to a transmission gateway for preparing said data blocks for transmission to receivers;
>
> transmitting preprocessed data to receivers communicating with said devices; and
>
> instantaneously notifying said devices of receipt of said preprocessed data whether said devices are online or offline from a data channel associated with each device.

A219 at 33:15-35; A222.

C. The Prosecution History

The ’914 patent claims priority to a provisional application dated January 26, 1996, and is a continuation of an application filed on January 24, 1997. A171. On November 17, 2003, the Examiner issued a final rejection of all asserted claims. On April 19, 2004, applicants filed an amendment cancelling all previous claims (1-178) and presenting new claims (179-255). A10387.

In the April 2004 amendment, eight years after the application to which the ’914 patent claims priority, the applicants added the disputed term “data channel” to the claims. The applicants had originally used the language from the ’433 patent’s claim 1 for the “notifying” step: “instantaneously notifying said computing devices of receipt of said preprocessed data whether said computing devices are on or off.” A10133 32:65-67. Notwithstanding the fact that the specification does not mention the term “data channel,” applicants amended the claims to recite “instantaneously notifying said devices of receipt of said preprocessed data ***whether said computing devices are online or offline from a data channel associated with each device***.” A10387 (emphasis added).

After further amendment, the claims were allowed and the patent issued on April 25, 2006.

II. The Accused Products

SimpleAir accused Google Cloud Messaging ("GCM") and its predecessor, Android Cloud to Device Messaging ("C2DM"), a system of distributed servers that handles messages from first-party and third-party servers that are intended for delivery to GCM-enabled mobile devices. SimpleAir accused all messages sent through Google's systems to some 193 million mobile devices. A18.

According to SimpleAir, the final step of claim 1 is performed by a radio transceiver (the accused "receiver"), a chip in third-party mobile devices, *i.e.* smartphones and some tablets. A2266-27 170:25-171:13; A2269 173:4-13. The transceiver can receive wireless data from, for example, a cellular network operated by a carrier. The transceiver "notifies" the CPU (the accused "remote device") of receipt of a message. *Id*. The accused transceivers in the mobile devices themselves are made and programmed by third parties, e.g. Qualcomm, Texas Instruments, or Broadcom, and the mobile devices are made by companies like LG, Samsung, or HTC. A2766 127:19-25; A2186-87 90:22-91:7. SimpleAir did not accuse Google of making any hardware or software for the accused transceiver chips that perform the final step of claim 1, or of making any of

the mobile devices. A2393 111:13-23; A2271 90:22-91:7; A2534-35 109:22-110:7.

III. Claim Construction

SimpleAir asserted the '914 patent in an earlier case, *SimpleAir Inc. v. Apple, Inc., et al.*, No. 2:09-cv-289 (E.D. Tex.). On September 2, 2011, United States Magistrate Judge Charles Everingham issued a claim construction order addressing some of the terms in dispute here. A10138 ("the AWS Order"). The defendants in that case settled before trial.

In this case, on April 26, 2013, United States District Court Judge Rodney Gilstrap held a *Markman* hearing, A4197, and on May 21, 2013 issued an order on claim construction. A124. The order rejected Defendants' indefinite contentions under the now-defunct "insolubly ambiguous" standard. A130. For the two claim constructions challenged here, the district court rejected Defendants' arguments, adopting SimpleAir's proposed constructions instead. A131-40; A151-54. The district court construed a term from the '433 patent, "whether said computing devices are on or off" to mean "whether said computing devices are powered on or powered off." A148. Subsequently SimpleAir dropped the '433 patent from the case.

IV. The Microsoft Settlement

The district court initially scheduled a trial to begin on January 6, 2014. A10484. On November 25, 2013, SimpleAir executed a settlement agreement with co-defendant Microsoft. A12088. The Microsoft Settlement granted Microsoft rights to [redacted]. A12095. Two days later, on November 27, 2013, SimpleAir's damages expert Mr. Robert Mills issued a supplemental report on damages for Google, relying primarily on the settlement. A11471-84.

At that time, Google had already filed its *Daubert* motion challenging Mr. Mills' opinions on damages; on December 6, 2013, Google filed a motion to strike Mr. Mills' supplemental report. A11455. Both motions were denied at a pre-trial conference (A115), and in a subsequent written order. A117.

V. The Trials

A. The First Jury Returned a Partial Verdict

Trial between SimpleAir and Google began the morning of January 13, 2014. At trial, SimpleAir alleged that the use of GCM and C2DM to send messages infringed the '914 patent, and on that basis sought either $127 million or $146 million in damages. Closing arguments took place the

morning of January 17, and the jury retired for deliberation that afternoon. A3440. A series of jury notes indicated the jury was unable to reach a unanimous decision. A3471-75. After the third such note, the district court suggested the jury could "reach a unanimous decision on some but not all of the questions within the verdict form" and to "return that partial verdict." A3477. The jury then returned a verdict on liability, finding Google infringed Claims 1, 2, 3, 7, and 22 of the '914 patent and that the patent was not invalid. A3480 19:11-24. The jury left damages blank. A3480-81 19:25-20:6. The district court accepted the partial verdict and dismissed the jurors. A3481-82 20:15-21:7; A85.

B. The Damages Retrial

On February 10, 2014, the district court denied Google's motion for a new trial (A11533) and instead granted SimpleAir's motion for entry of partial judgment on liability and a new trial on damages only. A79. Google renewed its motions for JMOL on non-infringement, invalidity, and damages pursuant to Rule 50(b), and for a new trial as to liability under Rule 59(a) (A11556, A11585, A11600, A11633), but these motions were not ruled on until after the re-trial on damages.

On February 27, 2014, Google renewed its *Daubert* motions, again seeking to exclude the expert testimony of Mr. Mills. A11656. The district

court held a pretrial conference (A78), and issued a written order denying the motion. A68.

The re-trial on damages began on March 17, 2014, and the case went to the jury on March 19, 2014. That same day, the jury returned a verdict of $85 million in damages against Google. A53.

On June 10, 2014, Google filed renewed motions for JMOL on damages and for a new trial on both liability and damages. A11813; A11849. The district court denied Google's February 13 renewed motions on liability (A26), and Google's June 10 motions for JMOL on damages and for a new trial as to liability and damages. A5, A1.

Google filed its notice of appeal on January 7, 2015. A11888.

SUMMARY OF ARGUMENT

The term "a data channel" renders the claims indefinite. As used in the claims it fails "to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014). The term does not appear anywhere in the specification, and the term was first added to the claims in April 2004, more than eight years after the claimed priority date. The district court identified purported evidence from the specification for "data channel," but those passages have no connection to "data channel" and offer no basis for

establishing "the scope of the invention." Because the relied-on intrinsic evidence was not in fact relevant to the claim term, the resulting construction of "a data channel" was excessively broad and ambiguous. The *Nautilus* court held such ambiguity in patent claims is contrary to 35 U.S.C. § 112 and must be eliminated by finding claims indefinite. 134. S. Ct. at 2129.

If this Court does not agree, it should correct the district court's construction. It was error to construe the term "whether said devices are online or offline from a data channel associated with each device" without making clear that whatever "data channel" the devices "are online or offline from" must be different from the communication path the receivers use to notify the devices. The recited "notifying" step occurs when the receivers notify the devices, and this notifying must occur even when the devices are "offline from a data channel associated with each device." It logically follows that whatever communication path the devices "are online or offline from" must be different from the communication path the receivers use to notify. If the path can be the same, then the claims are internally inconsistent: a device in the offline condition is not connected to the path, but at the same time must be connected to that path to receive notifications. *See ArcelorMittal Fr. v. AK Steel Corp.*, 700 F.3d 1314, 1320 (Fed. Cir. 2012). Under a correct construction, Google does not infringe because the

accused mobile devices use the same path through the receiver to receive messages as well as other Internet data.

Next, under *Nautilus* and its progeny, "transmission gateway" also renders the claims indefinite. Neither party asserted that "transmission gateway" was a term known in the art, or provided extrinsic evidence of its meaning. The words "transmission gateway" do not appear in the specification and are not defined in the prosecution history. The district court held that a ***wireless*** gateway in the specification is one embodiment of a transmission gateway, but does not limit the scope of the claims. In the absence of anything in the intrinsic or extrinsic record to limit what kinds of gateways fall within the scope of the claim, the term impermissibly leaves the skilled artisan unable to determine what is covered. The claims are therefore indefinite. *Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1373-74 (Fed. Cir. 2014).

It was also error to construe the term "parsing said data with parsers" without making clear that the parsers each respectively correspond to the type of information received. The specification states that in the invention any number of different parsers can be used, each corresponding to one of the types of information received from the various information sources. *On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1340 (Fed. Cir.

2006); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc). Under the correct construction, Google does not infringe because it does not use parsers corresponding to the type of information received. Rather, Google's accused servers merely route all messages to their intended destination, without regard for the type of information received.

Furthermore, the judgment should be reversed for lack of any evidence to show joint infringement. *Aristocrat Techs. Australia Pty Ltd .v Int'l Game Tech.*, 709 F.3d 1348, 1362 (Fed. Cir. 2013); *see also Ericsson, Inc. v. D-Link Systems, Inc.*, 773 F.3d 1201, 1221 (Fed. Cir. 2014) (citing cases). The final recited step of claim 1 requires that "receivers" "instantaneously notify[]" the remote devices. Under SimpleAir's theory of infringement, the accused "receivers" that notify are radio transceivers within smartphones, and the accused notified "devices" are the CPUs within those products. It was undisputed that the transceiver chips performing the recited step are made and programmed by companies like Qualcomm, Texas Instruments, and Broadcom. Those chips are placed in mobile devices by companies like Samsung and HTC. SimpleAir did not present any evidence that Google plays any role in the hardware or software for these "receiver" chips, or that Google directs or controls their operation. Accordingly, Google does not infringe.

Rather than apply the governing law in *Aristocrat*, the district court relied on an incorrect interpretation of *SiRF Technology Inc. v. ITC*, 601 F.3d 1319 (Fed. Cir. 2010). The district court read *SiRF* to establish a blanket rule "when an action automatically causes a result— and the action is designed to cause that result— the party who performed the action is personally responsible for that result." A11805. This Court explicitly rejected such a "natural, ordinary, and reasonable consequences" standard in *Aristocrat*. 709 F.3d at 1363. Furthermore, unlike in the present case, in *SiRF* each step was performed by equipment controlled by the accused infringer, who designed, built, and programmed the chips providing the hardware and software functionalities. 601 F.3d at 1331. The judgment of infringement should be reversed.

On damages, the district court abused its discretion by denying Google's *Daubert* motions and erred by denying JMOL on SimpleAir's two damages theories. SimpleAir's original per-unit-royalty theory relied on a conjoint survey that calculated $12.23 as the "market willingness to pay" for the patented technology. SimpleAir's expert, Mr. Mills then assumed without basis that $12.23 could be used as a price that Google would hypothetically charge users to enable the accused technology. That speculative assumption was improper because the expert who calculated the

"market willingness to pay" admitted that it was not equivalent to price, and the overwhelming evidence showed that $12.23 would be inconsistent with market prices. *Lucent Tech., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1335 (Fed. Cir. 2009). Next, Mr. Mills calculated the alleged per-unit profit Google would realize using that $12.23 price. He then assumed a baseline 50-50 split in profits, modified that baseline because Google would have a better bargaining position, and without considering the past practices of the parties or in the industry, and with no quantitative analysis, he arbitrarily chose a 70-30 profit split. SimpleAir's methodology is legally insufficient. *VirnetX, Inc. v. Cisco Systems, Inc.*, 767 F.3d 1308 (Fed. Cir. 2014).

SimpleAir's second damages theory was based on the Microsoft Settlement just seven weeks before trial. A settlement with a co-defendant on the eve of trial is not reliable evidence. *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 77-78 (Fed. Cir. 2012). Further, SimpleAir's settlement theory relied on speculative assumptions to scale up the payment in the Microsoft Settlement. Mr. Mills extrapolated from Microsoft's payment based on a calculated ratio of Microsoft's and Google's respective number of worldwide requests to deliver messages. In doing so, Mr. Mills assumed without basis that Microsoft's and Google's messaging systems have the same proportions of (1) entirely domestic use and (2) delivered

messages. There was no evidence to support either assumption. *Lucent Tech.*, 580 F.3d at 1335.

STANDARDS OF REVIEW

The district court's indefiniteness determination is reviewed de novo. *Interval Licensing LLC*, 766 F.3d at 1369. The district court's claim constructions relied only on intrinsic evidence and therefore are reviewed *de novo*. *Teva Pharms. USA, Inc. v. Sandoz*, 574 U.S. ___, 135 S. Ct. 831, 852 (2015); *In re Papst Licensing Digital Camera Patent Litig.*, 778 F.3d 1255, 1261 (Fed. Cir. 2015).

Applying regional circuit law, here the Fifth Circuit, this Court reviews the denial of a motion for judgment as a matter of law *de novo*, reversing a verdict when the court finds that a "reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue." *Voda v. Cordis Corp.*, 536 F.3d 1311, 1318 (Fed. Cir. 2008); *Cambridge Toxicology Group*, 495 F.3d 169, 179 (5th Cir. 2007).

Evidentiary rulings are reviewed under an abuse of discretion standard. *LaserDynamics*, 694 F.3d at 66 (applying the law of the 5th Circuit); *Texas A&M Research Found. v. Magna Transp., Inc.*, 338 F.3d 394, 402-03 (5th Cir. 2003).

ARGUMENT

I. THE TERM "A DATA CHANNEL" RENDERS ALL CLAIMS INDEFINITE, OR IN THE ALTERNATIVE, UNDER A CORRECT CONSTRUCTION GOOGLE DOES NOT INFRINGE.

A. The Claims Are Indefinite Under *Nautilus*.

The district court addressed indefiniteness before receiving the guidance set forth in *Nautilus*, 134 S. Ct. 2120. A patent claim is indefinite if it fails "to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Id.* at 2124.

Claim 1 requires that the final step whereby the receivers notify the devices occurs "whether the remote devices are online or offline from a data channel associated with each device." A219 33:32-35. The district court construed this term as "**whether the remote computing devices are or are not connected via the Internet or another online service to a data channel associated with each computing device at the time the preprocessed data is received by the receivers."** A140. It construed the contained term "data channel" as **"one or more communication channels or paths for accessing or viewing a category or subcategory of information that is provided by an information source over a communications network."** A137.

The term "a data channel" renders the claims indefinite because nothing in the intrinsic or extrinsic evidence suffices to inform "those skilled in the art about the scope of the invention." *Nautilus*, 134 S. Ct. at 2124.

1. The Patent Does Not Explain What "Offline From A Data Channel" Means.

The term "a data channel" was first added to the claims in April 2004, more than eight years after the claimed priority date. A10387. The term does not appear anywhere in the specification, and the parties agree that the only use of "channel" therein refers to a different type of channel than what is recited in the claims. A10336; A134. The Supreme Court of the United States recently explained how "absent a meaningful definiteness check . . . patent applicants face powerful incentives to inject ambiguity into their claims." *Nautilus*, 134 S. Ct. at 2129. That happened here. SimpleAir's alleged invention is a method for transmitting data to remote devices whether the devices are connected to the Internet (or some other online service) or not. A139. It accomplishes this by providing an alternative path through "receivers" by which information can be transmitted to remote devices even when those devices are "off-line (i.e. not connected to the Internet or some other on-line service.)" A206. This passage in the specification effectively defines what it means to be "offline": a computer that is offline is not connected to the Internet or on-line service. The claims,

as amended in 2004, add the concept of "offline from a data channel." But because the patent lacks any discussion of "a data channel" at all, the patent's definition of what it is to be "offline" does not explain what "offline from a data channel associated with each device" means.

2. The Claim Construction Order Relied On Specification Passages That Do Not Speak To The Meaning Of "Data Channel."

The parties disputed the ordinary meaning of "a data channel," but the district court did not rely on extrinsic evidence to construe the term. A133-36. Instead, it looked to the intrinsic evidence cited in the AWS Order, which it quoted at length. A136. However, the four portions of the specification cited in the AWS Order do not teach what "a data channel" is, and indeed are unrelated to any "channels or paths" that the receiver might be offline from. The claim construction order then cited two more passages on "feeds" and "broadcasting," as well as the Abstract and Figure 1. *Id.* These passages also do not show "a data channel." Finally, the claim construction order cited the passage headed "URL Broadcast and Hot Links." *Id.* (citing A218).[1] That passage too fails to teach what "a data channel" is. Furthermore, it does not mention a computer being offline at all.

[1] Cited by the district court as the '433 patent, 30:55-31:14.

The claim construction order does not identify any relevant passage in the specification by which a person of skill in the art could discern the "metes and bounds" of the claim term. *Nautilus*, 134 S. Ct. at 2127, 2130.

3. The District Court's Construction Provides No Way Of Determining Whether The Limitation Is Met.

The construction adopted by the district court is overbroad and contrary to the rationale and purpose of the standard for definiteness set forth in *Nautilus*. It states only what "a data channel" is used for ("accessing or viewing a category or subcategory of information"). Thus, "a data channel" could be any part or parts of any connections between the device and any of a multitude of information sources. There are numerous information sources on the Internet, and at any time a device may be connected to at most a small number of them. Under this construction, a device that is receiving information is always "online" from "one or more communication channels or paths" due to the fact that it is receiving information from somewhere. At the same time, the device is "offline" from numerous other paths to different information sources that the device is not currently receiving information from. The device is therefore "offline" from "one or more communication channels or paths" while ***at the same time*** it is "online" from "one or more communication channels or paths." According to the district court's construction, then, a device receiving information is

always both "online... from a data channel" and "offline from a data channel" as recited in the claims. Crucially, the construction leaves the jury with no identification of ***which*** channels or paths associated with the device matters for determining infringement. This shows the construction is overbroad and renders the scope of the claim unclear. The *Nautilus* court held such ambiguity in patent claims is contrary to 35 U.S.C. § 112 and must be eliminated by finding claims indefinite. 134. S. Ct. at 2129.

B. In The Alternative, This Court Should Correct The Construction Of "Whether Said Devices Are Online Or Offline From A Data Channel Associated With Each Device."

Even if this Court does not hold the claims indefinite, it should correct the district court's constructions and grant Google judgment of no infringement. SimpleAir's alleged invention is to use an alternative communication path for electronic notifications so that computers can receive notifications even while offline. It was error to construe the term "whether said devices are online or offline from a data channel associated with each device" without making clear that whatever communication path the devices "are online or offline from" must be ***different*** from the alternative communication path the receivers use to notify the devices. Defendants' constructions made this requirement explicit, seeking to include in any construction of "data channel" the notion that the channel must be a

path "that does not include the attached receiver." A131-32. It is error to read a claim too broadly, as it is to read a claim too narrowly. *See, e.g.*, *Phillips*, 415 F.3d at 1321. The language of the claims is not consistent with SimpleAir's overly broad construction, and the specification does not support it.

Under properly construed claims, Google does not infringe. Google's accused system sends messages over the same communication path as other Internet data—it does not use a separate path. Unlike in the claimed invention, the accused mobile devices receive messages from Google's system only when online.

1. The Claim Language Requires That There Be A Difference Between The Data Channel And The Path Through The Receiver Whereby Notifications Are Delivered.

Claim construction begins with considering the language of the claims themselves. *Phillips*, 415 at 1314. "The claims and specification should be read in a manner that renders the patent internally consistent." *ArcelorMittal*, 700 F.3d at 1320 (quotations omitted).

The recited "notifying" step occurs when the receivers notify the devices, and this notifying must occur even when the devices are "offline from a data channel associated with each device." It logically follows that whatever communication path the devices "are online or offline from" must

be different from the communication path the receivers use to notify the devices. To allow the "data channel" to ***include*** paths though the receiver, in contrast, would render the claims internally inconsistent: in order to perform the final step while in the offline condition and not connected to the path, the remote device would also at the same time need to be online and connected to the same path. That is an impossible contradiction.

2. The Specification Does Not Support The District Court's Overly Broad Construction.

There is no support for the district court's construction. It is hornbook law that "the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim." *Phillips*, 415 F.3d at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). As discussed above, SimpleAir's invention is directed to transmitting information to a remote computer whether the computer is online or offline. The only disclosed solution for transmitting information whether the device is online or offline is to provide an alternative communication path through a "receiver," as recited in the claims, by which information can be transmitted even when a device "is off-line."

Notably, despite listing at least seven different wireless technologies in addition to the preferred paging network for the alternative path, the

applicants never mention the Internet or some other online service as a possible medium for transmitting notifications. A207 9:15-25. This omission is especially striking in light of the applicants' expressed preference for the Internet protocol TCP/IP for transmissions from the information source to the broadcast server. A208 11:65-66. Likewise, the patent teaches that notification information that is transmitted wirelessly over the alternative path "can also be sent simultaneously" by a conventional network path: "via a wired connection to the same personal computers 14 and computing devices having Internet/World Wide Web access (direct or via on-line service providing Internet and World Wide Web access)." A218 32:61-67. Thus the applicants conspicuously avoided saying that a conventional type of network connection, e.g., a modem connected to the Internet or other online service, could serve as the alternative path that is the crux of the alleged invention. There is no support for the district court's broader construction.

The district court acknowledged Defendants' argument twice. A134; A138. It also acknowledged at the *Markman* hearing that this step was the most hotly contested, and permitted SimpleAir extra time to argue it. A4217-18; *see also* A4227-28 (Defendants' argument). Yet in the section of its order providing the district court's analysis, it failed to explain why the

claims or the specification justified rejecting Defendants' argument that whatever "data channel" the devices "are online or offline from" must be ***different*** from the path the receivers use to notify the devices. A139.

C. Under A Correct Construction, Google Does Not Infringe.

Because the correct construction of the claims requires that the "data channel" must be a path different from a path through the receiver, this Court should grant judgment of no infringement as a matter of law. SimpleAir cannot show infringement because the accused products receive Internet data exclusively via the receiver. The accused mobile devices do not receive messages through any other path.

In the accused mobile devices, at any point in time the path from the Internet to the accused "remote device" – the CPU– is the same: the CPU receives messages either from a receiver via WiFi, if connected, or cellular data. SimpleAir told the jury that the accused devices need to use the CPU and an attached "radio" receiver in order to make a connection to a server. A2430-31; *see also* A2265 (data for the mobile device must go through an antenna "connected to a radio receiver, either the WiFi or the – the cellular. And that receiver then connects to the CPU."). Thus, the accused mobile devices receive Internet content, including messages sent though GCM/C2DM, ***only*** though the receiver, and ***never*** through "a data channel"

that must be a different path. In contrast, the claims require that the remote devices receive notifications whether "online or offline from a data channel [different from the path through the receiver] associated with each device." Google is entitled to judgment as a matter of law of no infringement.

II. THE TERM "TRANSMISSION GATEWAY" RENDERS ALL CLAIMS INDEFINITE.

Claim 1 requires "a transmission gateway for preparing said data blocks for transmission to receivers." As discussed in Section B.2, the specification discloses exclusively wireless technologies for the alternative path for transmitting notifications. A207 9:15-25. Similarly, the patent discloses a "wireless gateway 136" for transmission over a "wireless broadcast network," as shown in Figure 2. *Id.*; A174 Fig. 2. However, the claims are drawn to a "transmission gateway," not a "wireless gateway." There is nothing in the specification or prosecution history to inform those skilled in the art about the scope of claims reciting "transmission gateway." Under *Nautilus* and its progeny, the claims are indefinite.

A. The Term "Transmission Gateway" Was Not Known In The Art.

Neither party asserted that "transmission gateway" was a term known in the art, or provided extrinsic evidence of its meaning. Indeed, the district court expressly found the word "gateway" to be ***broader*** in meaning than as

ordinarily used in the art. A157 (dismissing extrinsic evidence of the meaning of "gateway" on the grounds that "within the patents, the term 'gateway' is used in a broader context that includes connections between different software components"). Thus, one of ordinary skill would not be able to rely on any ordinary meaning and would need to find the bounds of the claim set forth in the intrinsic evidence.

B. The Term "Transmission Gateway" Is Not Used In The Specification And Is Not Defined In The Prosecution History.

The words "transmission gateway" do not appear anywhere in the specification. SimpleAir argues that none of the descriptions of how to carry out "preparing said data blocks for transmission to receivers" in the specification "defines the limits of that [phrase's] scope." A10023. Neither party argues that the '914 patent prosecution history defines the term. Accordingly, there is nothing in the record to support a finding that a person of skill in the art could discern the "metes and bounds" of the claim term. *Nautilus*, 134 S. Ct. at 2127. The district court's excessively broad construction only underscores this point: as construed, any piece of software that receives data blocks and passes them on to "other resources" used in transmission could be a "transmission gateway."

C. The Disclosure Of A "Wireless Gateway" As A Single Example Fails To Set Any Boundary On The Scope Of The Claims.

The district court relied on two grounds for finding the claim definite: (1) "the *AWS* Court and even the *AWS* Defendants" found it "sufficiently definite to construe" and (2) the specification discloses a "wireless gateway" which "is an embodiment of a transmission gateway that prepares data blocks for transmission to receivers." A161-62. As to the first ground, the intervening *Nautilus* decision makes clear that the ability to "ascribe ***some*** meaning to a patent's claims," especially "viewing matters *post hoc*" is not sufficient to overcome an indefiniteness challenge. *Nautilus*, 134 S. Ct. at 2130. Furthermore, the earlier litigants, like the district court, were applying the now-defunct "insolubly ambiguous" standard.

As to the "wireless gateway" embodiment, here there is nothing to show one of skill in the art what, besides a "wireless gateway," may also be a "transmission gateway" and thus within the scope of the claims. SimpleAir admits that the disclosure of a "wireless gateway" in the specification does not define the limits of the claim scope. A10023. In *Interval Licensing*, 766 F.3d at 1373-74, this Court held a claim indefinite where the patent failed to provide "objective boundaries" for a term, and found that the use of a "lone example" is insufficient. Because

"transmission gateway" is not a term of art, just like the term in *Interval Licensing*, one of ordinary skill would need to look to the intrinsic evidence to find the bounds of claim scope. Here, one of ordinary skill in the art would find nothing to set a boundary on the scope of the claims. "Such ambiguity falls within the 'innovation-discouraging zone of uncertainty against which [the Supreme Court] has warned.'" *Id*. (quoting *Nautilus*, 134 S. Ct. at 2130).

Even if *Interval Licensing* is limited to "subjective" terms or terms of degree, the logic of that case squarely applies here. As here, the term had no plain meaning and was not limited to the sole example in the specification. It makes no difference that *Interval Licensing* addressed a different type of term. The indeterminate claim scope, lying at some unknown boundary beyond the disclosed embodiment, renders the claims indefinite.

D. The District Court's Overbroad Construction Confirms The Term Is Indefinite.

The district court construed "a transmission gateway for preparing said data blocks for transmission to receivers" to mean **"one or more software programs (or a portion of a program) that prepare the data blocks for their transmission to receivers and interface with other resources used to transmit the preprocessed data."** A162. The claim itself recites "for preparing said data blocks for transmission to receivers,"

so removing the redundant language of the construction leaves "transmission gateway" construed as "one or more software programs (or a portion of a program) that … interface with other resources used to transmit the preprocessed data." That overbroad construction fails to identify any structure other than software. It would apply to any piece of software within the system that "interface[s]" with other resources used for transmission—in short, it would apply to any software in the distributed system. The district court's overbroad construction confirms that "transmission gateway" is indefinite.

III. THE DISTRICT COURT ERRED IN CONSTRUING "PARSING SAID DATA WITH PARSERS" AND UNDER A CORRECT CONSTRUCTION GOOGLE DOES NOT INFRINGE.

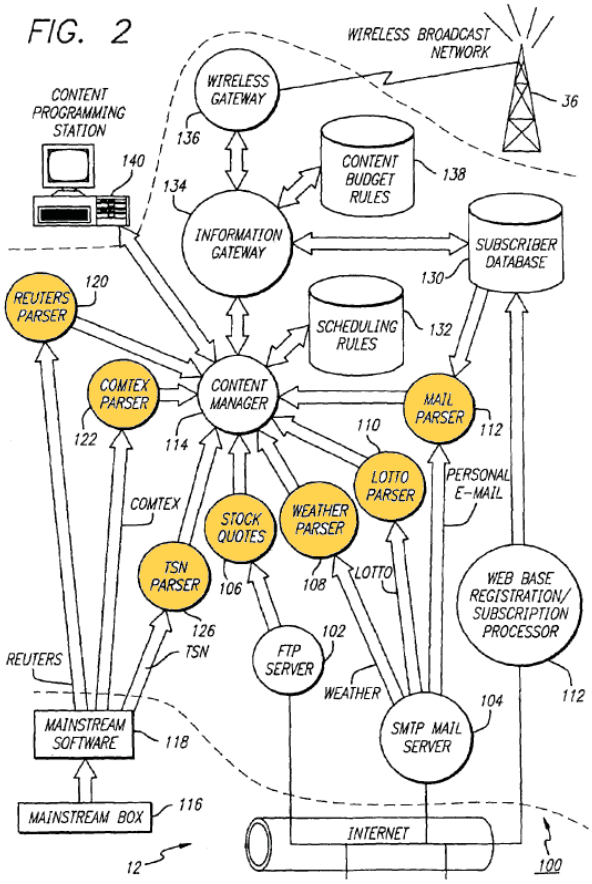
It was error to construe the term "parsing said data with parsers" without making clear that the parsers "each respectively correspond to the type of information that was received," as Defendants proposed. The invention transmits "data parsed from a plurality of incoming data feeds 16 from existing information sources 12." A205 6:38-40. The invention requires multiple parsers because it handles differing types of information from various online sources. Each parser is designed for a different type of information. In contrast, Google's messaging system uses the same software

to route messages to mobile devices in the same way, regardless of the type of information. Google does not infringe.

A. The Intrinsic Evidence Establishes That "Parsers" Must Be Tied To The Types Of Information From The Various Information Sources.

Claims "must be read in view of the specification, of which they are a part." *Phillips*, 415 F.3d at 1315. "[T]he specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* In this case, the specification focuses exclusively on the use of parsers each corresponding to a type of information received. *On Demand Mach.*, 442 F.3d at 1340. However, the district court construed "parsing said data with parsers" to mean **"using multiple computer software programs, routines, or functions to break or divide data received from an information source into components whose content or format can be analyzed, processed or acted upon."** A154.

Here, the disclosure of "parsing" in the specification confirms that parsing operates on the different types of data received from information sources. Figure 2 illustrates this relationship:



A174 (highlighted)

The patent states that "***[t]he present invention*** is not limited to the information sources or parsers described herein. Rather any type of information source ***and corresponding parser*** may be used." A206 8:21-24. Tellingly, even at its full breadth, the patent discloses that a ***corresponding*** parser is used for each type of information source. "When a patent thusly describes features of the 'present invention' as a whole, this description limits the scope of the invention." *Verizon Servs. Corp. v. Vonage Holdings*, 503 F.3d 1295, 1308 (Fed Cir. 2007).

The specification consistently confirms that the parsers correspond to categories of data — indeed, the parsers must do so in order to meaningfully parse the data for transmission in the claimed system.

> As is illustrated in Fig. 1, information sources **12**, such as the Internet, on-line services and other information sources, provide data feeds, including real time data feeds, to a network of servers **33** in the central broadcast server **34**. These data feeds, ***once they have been parsed***, compressed, encrypted and packetized ***based on feed and data type***, provide the basis for outgoing broadcast sent immediately or on a scheduled basis.

A206 7:54-61 (emphasis added). The invention is directed to broadcasting of a large variety of data processed from a multiplicity of sources:

> The data, which can include but is not limited to stock quotes, weather, lotto, E-mail, etc. ***is then respectively parsed by parsers***, such as the stock quote parser **106**, weather parser **108**, lotto parser **110** and mail parser **112**, and then transmitted to the content manager **114** located in the central broadcast server **34**. Data is also provided to the central broadcast server **34** by sources **116** which provide software and hardware for a mainstream connection, via FM radio, with the source **118**. This kind of data ***is also parsed by various parsers***, such as Reuters **120**, COMDEX **122** and TSN **126**.

A206 8:1-25 (emphasis added). These different sources provide data feeds with distinct syntax and structure. A216 28:28-41 ("information is broken into logical information categories" and "is classified into various formats to be able to indicate what type of a feed is present"). For example, stock quote data describes stock prices and gains/losses, while weather data indicates forecasted temperature and probability of rain. In order to handle

these structurally distinct data feeds, the system must use corresponding parsers.

The district court rejected the clear disclosures of the specification as merely "embodiments." A153-54. But its order never identifies any language in the specification that supports its extremely broad construction. *Id.* "The claims cannot be of broader scope than the invention that is set forth in the specification." *On Demand Mach.*, 442 F.3d at 1340. Accordingly, this Court should construe "parsing said data with parsers" to make clear that the parsers "each respectively correspond to the type of information that was received."

The claim construction order sidestepped the issue in dispute. The claim recites "parsing said data with parsers corresponding to said central broadcast server." A219 33:22-23. At the *Markman* hearing, the parties disputed the meaning of "parsing said data with parsers" but not the meaning of "corresponding to said central broadcast server." Defendants stated "[t]he corresponding to said central broadcast server portion addresses the location of the parsers, and there's no dispute among the parties as to where the parsers are located. They are located at the central broadcast server." A4300 104:6-11. As to the disputed phrase, Defendants argued that the specification's statement of "the present invention" defined the relationship

between the "type of information source and corresponding parser." A206 8:21-24:

> So the corresponding relationship is specifically defined here in the specification. I understand in the claim language that there is another use of the word corresponding, and it talks about the location of the parsers at the central broadcast server, but corresponding as it is used in the Defendants' proposed construction is intended to describe this exact piece of the specification that is identified as the present invention.

A4303 107:13-24.

Defendants' position was understood by the district court. A4303-04 107:25-108:19. Nevertheless, the claim construction order failed to address Defendants' argument, and instead focused on the point that the claims further recite "corresponding to said central broadcast server." A153-54. The existence of that additional claim limitation, whose meaning was never in dispute, does not resolve the dispute whether to construe "parsing with said parsers" to reflect the specification's unambiguous description of the invention. This Court should correct the error and adopt Google's construction.

B. Under A Correct Construction, Google Does Not Infringe As A Matter of Law.

Further, under the correct construction, no reasonable jury could find that Google performs the "parsing" step. SimpleAir's theory of infringement depended entirely on the district court's refusal to limit the

scope of the claims to the invention disclosed in the specification. With the claims properly construed, Google does not infringe because the accused system does not include any parsers that parse data corresponding to the type of information that was received.

GCM/C2DM do not, and do not need to, parse incoming "data"; indeed it works better by not parsing it, but rather simply routing it to its intended destination. Specifically, each of the accused "parsers" in Google's systems are servers that operate generically in order to route messages, without regard for the source of the information transmitted. A2245 149:9-19 (Dr. Knox testifying the GCM/C2DM backend breaks down the registration ID's token data into items such as sender ID, Android ID, and ID of app); A2246-47 150:17-151:25 (identifying a "general parser" for text but noting "it doesn't care where it came from" and another "parser" for "how it's eventually going to route the message"); A2248 (identifying various routines for putting a message "together again in a different form that it needs to do in order to send it on to the phones").

Indeed, SimpleAir acknowledges that GCM never parses the payload of a message—that is, the content that is particular to an information source. A2369 87:11-23; A2371 89:3-10 (Google does not parse a payload, such as a message to "duck and cover"); *see also* A2248-49 152:24-153:18 (Google

does not parse a payload, such as a baseball score). Google's accused systems do not parse the content; they simply pass it along. With the claims properly construed, Google is entitled a judgment of no infringement as a matter of law.

IV. UNDER THIS COURT'S PRECEDENTS ON JOINT INFRINGEMENT, GOOGLE DOES NOT INFRINGE AS A MATTER OF LAW.

Google is entitled to a judgment of no infringement. A party is liable for infringement of a method claim if each step is performed personally or through another acting under his direction or control. *Aristocrat*, 709 F.3d at 1362; *see also Ericsson*, 773 F.3d at 1221 (citing cases). SimpleAir failed to show Google performs the recited "instantaneously notifying" step under either a personal performance theory or a joint infringement theory.

The final step of claim 1 requires that the accused "remote devices" be "instantaneously notif[ied]" by "receivers:"

> transmitting preprocessed data to receivers communicating with said devices; and
>
> instantaneously notifying said devices of receipt of said preprocessed data whether said devices are online or offline from a data channel associated with each device.

A219 33:30-35 (corrected). At trial, SimpleAir relied on a personal performance theory—but its expert testified that the "devices" are the CPUs in mobile devices, and the "receivers" that notify them are radio transceivers

in the devices. Thus, according to SimpleAir, the "notifying" step is physically performed by transceiver chips within mobile devices. It is undisputed that the accused transceiver chips were built, programmed, owned, and operated by third parties.

In post-trial briefing, SimpleAir raised an alternative theory that the verdict could be defended under the 'direction or control' standard for joint infringement. A11808. But SimpleAir provided no evidence of Google's involvement with making, programming, or operating the accused transceiver chips; rather it was undisputed the chips were built, programmed, owned, and operated by third parties independently. Hence SimpleAir did not show that the chips performed the recited step under Google's direction or control. Indeed, SimpleAir never even identified for the jury the various companies who make, program, and sell the various chips used in mobile devices, or which models are used in the products where it contends the "notifying" step is performed. And while SimpleAir's expert called the jury's attention to the fact he studied Google source code, A2184 88:15-22; A2220-21 124:16-125:25, he never mentioned looking at any code used on the chips performing the final step of the method to determine infringement.

SimpleAir's "black box" analysis, relying only on alleged causation of the recited step, is legally insufficient. *Aristocrat*, 709 F.3d at 1363

(rejecting "natural, ordinary, and reasonable consequences" standard). This Court consistently finds no infringement because independent third-parties built and programmed, or simply owned and operated, computer devices performing steps of the claimed method. *See Deep9 Corp. v. Barnes & Noble, Inc.*, No. 11-0035, 2012 WL 4336726, *8-9 (W.D. Wash. Sept. 21, 2012), *aff'd per curiam*, 504 Fed. App'x 923 (Fed. Cir. 2013) (no liability because mobile Nook devices owned by customers, not defendant, performed the recited "downloading" and "updating" steps); *Global Patent Holdings, LLC v. Panthers BRHC LLC*, 586 F. Supp. 2d 1331, 1335 (S.D. Fla. 2008), *aff'd per curiam*, 318 Fed. App'x 908 (Fed. Cir. 2009) (no liability because the initial recited step "calls for action on the part of the remote computer user"); *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329 (Fed. Cir. 2008) (no liability because third-party bidders performed recited "inputting" step); *BMC Res. Inc. v. Paymentech LP*, 498 F.3d 1373, 1381 (Fed. Cir. 2007) (no liability because third-parties owned and operated computer "debit networks" that performed steps of the claimed method).

A. At Trial, The Material Facts Were Not Disputed By SimpleAir.

SimpleAir's expert Dr. James Knox repeatedly testified that the recited "receiver" performs the notifying step: "Q. So you agree that the

receiver notifies the CPU, right? A. Yes." A2271 175:3-5. "And the receiver doesn't know what to do with any of this, other than to give it to a CPU. It has to notify the CPU that the data is there." A2267 171:8-13.

SimpleAir did not accuse Google of making any of the mobile devices used in allegedly performing the final recited step. Instead, third-parties like Samsung, HTC or LG make those products. A2186-87 90:22-91:7; A2534-35 109:22-110:7. It was undisputed that another third party such as Qualcomm, Texas Instruments, or Broadcom provides the phone manufacturers with the chips that perform the "notifying" step.[2] A2392-93 110:2-111:23; A2766 127:19-25. And the mobile devices themselves are owned and operated by consumers, not Google.

SimpleAir did not contend that Google has any involvement in making or selling the chips, or that Google provides any of the software in them, A2393 111:13-23, and offered no evidence that Google does so. Indeed, Dr. Knox never identified for the jury the various companies who make, program, and sell the accused chips, or which models are used in the

[2] Dr. Knox noted in passing that phones can communicate over WiFi when connected, A2263 167:17-24, and that various physical packages are used for the CPU and receivers in phones. A2266-67 170:20-171:13. However, the testimony on infringement specifically focused on the transceiver. *See id*. at 111:5-23. SimpleAir did not contend that WiFi functionality or physical packaging made any difference to disputed questions of infringement.

products where he accuses the "notifying" step of occurring. SimpleAir did not present any analysis of the software operating on the chips. Accordingly, Google presented a divided infringement defense based on the undisputed fact that it does not direct or control third parties that provide the hardware and software for the accused receivers and CPUs in the accused mobile devices. A2930-34 144:6-148:1.

Here, as in previous cases— e.g., *Deep9, Global Patent, Muniauction, BMC Resources*—it is not sufficient for a patentee to contend that third party devices can carry out the recited step. SimpleAir made no effort to say whether the receiver notifying the CPU happens differently in different products, or consistently across products, or "automatically" in all the various products. That is something Dr. Knox could perhaps have formed an opinion about, but because he never looked at the software running the accused chips, he did not do so. *See also* A11807 ("SimpleAir did not seek to show, as Google suggests, that Google somehow performs the "instantaneously notifying" step by virtue of providing software or hardware.")

The jury heard no evidence that Google performs all the recited steps, or "exercises 'control or direction' over the entire process." *Muniauction*, 532 F.3d at 1329. On these facts, Google cannot be liable as a matter of law.

B. SimpleAir's Argument That Under *SiRF* Google Personally Performs The "Instantaneously Notifying" Step Is Without Merit.

Because SimpleAir conceded that the "instantaneously notifying" step is performed by a third party transceiver in a mobile device, *see supra*, SimpleAir relied entirely on testimony that a Google server sending data to mobile devices "automatically causes" the recited step to be performed by the transceiver chip in those devices. A12114. SimpleAir contends that Google "performs" this step because the accused system, namely Google's Mobile Connection Server ("MCS"), initiates the "transmitting" of data, and that data ends up at the receiver. A2270-71 174:22–175:9. The district court allowed the verdict to stand on this legally defective theory based on a misapplication of *SiRF*:

> SimpleAir presented substantial evidence showing that the "instantaneously notifying" step ***is not performed*** by "components within" an android phone or tablet, but ***by Google's MCS server*** which transmits the relevant data to Android devices and by doing so automatically causes notification of the processors within such devices. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 173:4-18; 174:17-175:9. This evidence is more than sufficient to support a jury's verdict of infringement under *SiRF*, 601 F.3d at 1331 (internal citation omitted).

A41.[3]

[3] The two passages of testimony cited contradict the district court's finding about where the step is performed–in fact they are passages where

SiRF merely held that where the performance of a claim includes intermediate steps not required by the claim, the fact that other parties perform these actions does not preclude a finding of direct infringement. 601 F.3d at 1330. It remains true that each recited step in a method must be performed by a single party to demonstrate personal, as opposed to joint, infringement. *Aristocrat*, 709 F.3d at 1363.

Furthermore, unlike in the present case, in *SiRF* each step was performed by equipment controlled by the accused infringer: "Once the technology is enabled, SiRF's SiRFstarIII chip and software, ***designed and built by SiRF,*** automatically perform the disputed steps of the claims at issue because the SiRFstarIII chips are programmed by SiRF to use the InstantFix ephemeris data automatically if it has been transmitted to the remote device." 601 F.3d at 1331 (emphasis added). In contrast, here there is no allegation that the accused "receivers" were designed, built, or programmed by Google; indeed there was no evidence that Google has any involvement in the hardware or software for the transceivers at all. Also, "[n]either SiRF's customers (the equipment manufacturers and software

---

SimpleAir's expert explains that the step is performed by the "receivers" – components within the phone. A2269 173:4-18 ("the receiver … has to instantaneously notify … that CPU"); A2270-71 174:17-175:9 ("the receiver notifies the CPU").

developers) nor the end users of the GPS receivers can modify the use of the EE files by SiRF's software or the functionality of the SiRFstarIII chip." *Id.* Here, by contrast, Google cannot enforce any such restriction on modification of the accused use or functionality, because Google does not contribute the hardware or software to the third-party "receivers." Next, "[o]nce the GPS receiver is enabled and ready to process the data, only SiRF's actions are involved in 'processing' or 'representing' the data." *Id.* Here, SimpleAir cannot argue that "only" Google's actions are involved, because it presented no evidence identifying what different hardware or software options are available for the accused "receivers," nor any evidence that Google is involved at all.

In *Ericsson*, this Court recently confirmed that *SiRF* is limited to the situation where the hardware and software are under the defendant's control: "Unlike the method in *SiRF*, there are no steps automatically performed by equipment controlled by [defendant]." *Ericsson*, 773 F.3d at 1222. Under SimpleAir's faulty interpretation of *SiRF*, where "automatically causing" a step of a method claim is the same as personally performing it, "a patentee would rarely, if ever, need to bring a claim for indirect infringement." *BMC Res.*, 498 F.3d at 1381. Moreover, SimpleAir's interpretation would overturn this Court's explicit guidance that it "will not unilaterally

restructure the claim or the standards for joint infringement to remedy these ill-conceived claims." *Id.*

SimpleAir's theory that Google performs the "instantaneously notifying" step cannot justify a finding of infringement.

C. SimpleAir's Alternative Argument That Google Directs Or Controls Others To Perform The "Instantaneously Notifying" Step Is Unsupported.

SimpleAir concedes that at trial, it "did not present a joint infringement theory" for the "instantaneously notifying" step. A11806; *see also* A10602 ("As for the "instantaneously notifying" step, SimpleAir does not assert any joint infringement theory.") In post-trial briefing, however, SimpleAir argued for the first time that the verdict could be supported by joint infringement. A11808. But there was no evidence at trial to support a finding that Google directed or controlled others who performed the "instantaneously notifying" step. *Aristocrat*, 709 F.3d at 1362. Accordingly, Google does not infringe.

The district court erred in denying JMOL by finding "evidence showing that Google controls the entire process of ***sending messages to*** Android devices using the accused GCM service—including the operation of ***the receivers that perform (unclaimed) intermediate steps***." A42. To be clear, it is not an unclaimed intermediate step at issue here; it is the final

recited "notifying" step, which SimpleAir agrees is performed by a "receiver." And because that final step is performed ***after*** Google's accused GCM/C2DM services "send messages to Android devices," the district court's reliance on evidence of "control" of ***transmitting messages*** is plainly inadequate. Even if Google controls the preceding steps, that does not show that Google controls the final, subsequent step.[4] The district court's analysis does not address the critical issue.

And, the evidence and testimony cited in the JMOL order is ***silent*** on the critical issue of whether Google "directs or controls" the third-party receivers to perform this step. Rather than cite specific evidence or testimony to support its finding, the order refers to six pages of testimony and three exhibits. *Id.* That testimony and evidence says nothing about the

[4] The last step of the claimed method is the receiver notifying the CPU, and not any subsequent processing by the CPU. *See* A2307 25:5-9 ("all we said in Claim 1 in that last step was that when that message comes down and is received by the phone, that the CPU is notified that that message has been received. We didn't say anything about what happened to it, what it did with it."); *see also* A11530 ("for claim 1 to be infringed … it is sufficient that the CPU be notified of receipt of the data," and no further actions in the phone or tablet are required.) Accordingly, any subsequent processing by the CPU is not part of the claimed method and not relevant to infringement. *See Amgen, Inc. v. Hoechst Marion Roussel Inc.*, 314 F.3d 1313, 1346 (Fed. Cir. 2003) (rejecting noninfringement analysis for method claims because the product comparisons "considered dispositive by the district court are not claimed and thus have no bearing on a proper infringement analysis").

operation of the accused "receivers" in mobile devices. A2814 28:8-21; A2816-22 30:13-36:23; A12085-87; A11892-908; A11909-16. Furthermore, none of this evidence suggests that Google has any relationship with those who make, program, sell, and use the accused "receivers."

SimpleAir also incorrectly compared these facts to *TQP Development, LLC v. Intuit, Inc.*, No. 12-180, 2014 WL 2809841 (E.D. Tex. Jun. 20, 2014), which is easily distinguished. The *TQP* court denied summary judgment of no joint infringement, finding there were disputed issues of fact.[5] The asserted method of encrypting and decrypting transmissions required steps by both a "transmitter" and a "receiver;" the patentee accused defendants' server as the "transmitter and a third-party client computer as the "receiver" when using the "RC4 encryption algorithm." *Id.* at *12. The patentee offered evidence that in some cases "the defendants' servers will ***dictate*** that [the accused algorithm] RC4 be used" on client computers. *Id.* at *12 (emphasis added). Critically, the district court found that all the recited steps "presume that the receiver (i.e., the client) and transmitter have already decided to engage in an encrypted communication." *Id.* Thus, the claimed method begins only ***after*** the server and client computers have

[5] Notably, the court granted summary judgment of no infringement on other grounds in a separate order. 2014 WL 2809841, at *15.

chosen the accused algorithm as a means of encrypting the communicated data. *Id.* On those facts, the district court held that the patentee could potentially show that the server computer directs or controls the client computer. Id. at *15. *TQP* therefore addresses the situation where the server and client have agreed before the method is performed to cede control to the server, such that the server can "dictate" that in a particular instance the client will perform the recited step.

Here, no evidence suggests that Google cooperates with third parties to select an infringing technology, or that based on a previous agreement Google can dictate how the third-party devices perform. Rather, as in previous cases— e.g., *Deep9, Global Patent, Muniauction, BMC Resources*—independent action by the third party is essential to the performance of the claim.

Finally, the district court cited testimony by Dr. Knox for the notion that "when Google's MCS server transmits data to an Android device, the processor in that device is automatically notified of the receipt of data." A42 (citing A2270-71 174:17-175:9.) However, absent a "principal-agent relationship or like contractual relationship," one party cannot be vicariously liable for another party's actions. *Aristocrat*, 709 F.3d at 1363. Dr. Knox's testimony on causation was not evidence of direction or control, which

SimpleAir admits it did not argue at trial. And his testimony that Google is "responsible" for the receivers performing the "notifying" step is, at most, a claim about mere physical causation, not an opinion on agency or contractual relationship, for which he had no evidence.

Under this Court's precedents, Google does not infringe. The Court should reverse the judgment of infringement.

V. THE DAMAGES VERDICT CANNOT STAND.

Following the first trial, the jury returned a verdict on liability, but could not come to agreement on damages. Following a re-trial on damages only, the jury returned a verdict of $85 million. Neither SimpleAir's original, per-unit-royalty theory nor its second, settlement theory is legally sufficient to support the verdict. The jury award is "grossly excessive," "clearly not supported by the evidence," and "based only on speculation or guesswork." *Lucent Techs.*, 580 F.3d at 1310 (quotation omitted).

A. SimpleAir's Per-Unit-Royalty Theory Relied on Unsupported Assumptions and Guesswork.

SimpleAir's per-unit-royalty theory was based on a conjoint survey that calculated $12.23 as the "market willingness to pay" for the patented technology. SimpleAir's expert, Mr. Mills, then assumed without basis that $12.23 could be used as a price that Google would hypothetically charge users to enable the accused technology. Next, Mr. Mills estimated the

hypothetical per-unit profit Google would realize using that $12.23 price. He then assumed that, if the parties had equal bargaining power when negotiating over that profit, they would split it 50-50. Based solely on Google's superior bargaining power, he then revised that split to 70-30, without supporting evidence based in past practices or any quantitative analysis. He calculated his final royalty based on that profit split and a royalty base including the entire universe of some 193 million Android mobile devices. Mr. Mills opined that Google would have paid $146 million. Here, as in *Lucent*, a review of the evidence leads to "the unmistakable conclusion that the jury's damages award is not supported by substantial evidence, but is based mainly on speculation or guesswork." 580 F.3d at 1335.

1. Mr. Mills Incorrectly Assumed That "Market Willingness To Pay" Equals Price Even Though The Evidence Proves Otherwise.

SimpleAir's survey expert, Dr. Srinivasan, conducted a conjoint survey allegedly directed to the value of the accused technology to users of mobile devices. Mr. Mills adopted Dr. Srinivasan's exact determination of $12.23 as the "market willingness to pay" as the price that Google would hypothetically charge users for the accused technology. A3742 151:5-13. The record proves that assumption was meritless. Dr. Srinivasan himself

admitted that his calculation of the market willingness to pay was not equivalent to a calculation of price. A3703 112:19-22, A3705 114:1-5). In assuming that Dr. Srinivasan's calculation of market willingness to pay can be used as a price charged for technology, Mr. Mills failed to consider relevant market factors, such as competition, that drive the price of goods down. There was no dispute that Dr. Srinivasan's calculation omitted consideration of market price reaction. A3707-09 116:18-118:2; A3974-79 9:18-14:22 (Google's expert Dr. Dhar explaining that competition would drive the price down).

Further, Mr. Mills' misuse of Dr. Srinivasan's results cannot be reconciled with the real-world facts of this case. Mr. Mills assumed that Google could sell a feature to 42% of Android users at a price of $12.23. A3743-44 152:21-153:8. He made this assumption in the face of the fact that [redacted]. A3779-80 21:20-22:11. Additionally, Google does not charge customers for the use of the accused technology. A3826-28 33:22-35:15. No adjustment can save SimpleAir's per-unit-royalty theory from the fallacy of assuming that market willingness to pay can be used as a price. *See Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1317 (Fed. Cir. 2011) ("Beginning from a

fundamentally flawed premise and adjusting it based on legitimate considerations specific to the facts of the case nevertheless results in a fundamentally flawed conclusion.").

On JMOL, the district court failed to evaluate this sufficiency challenge, incorrectly holding that *Versata Software, Inc. v. SAP America, Inc.*, 717 F.3d 1255 (Fed. Cir. 2013), cert. denied 134 S.Ct. 1013 (2014), bars a post-trial challenge to the sufficiency of damages testimony where the court previously denied a *Daubert* challenge to the admissibility of the testimony. A24. In truth, *Versata* criticized appellant for arguing on appeal that testimony never should have been admitted, where appellant did not appeal admissibility but rather only a Rule 50 motion. 717 F.3d at 1264. Here, the district court improperly seized on Google's use of the words "renews its objection …" and ignored that fact that the next sentence said "[o]f course, even if the testimony was properly admitted, that does not mean that it is legally sufficient to support a verdict." A24. The district court erred by not granting Google JMOL because in view of the evidence at trial, no reasonable jury could have credited Mr. Mills' methodology.

2. Mr. Mills Relied On Unsupported Guesswork In His Split of Alleged Profits.

The district court did not have the benefit of this Court's guidance in *VirnetX*, 767 F.3d 1308. That case requires that the damages verdict here be

reversed. The *VirnetX* Court rejected an expert's use of the initial assumption that equally matched parties would start from a baseline 50-50 split of incremental profits from the accused technology. *Id.* at 1334 ("[T]he suggestion that those [incremental] profits be split on a 50/50 basis — even when adjusted to account for certain individual circumstances — is insufficiently tied to the facts of the case, and cannot be supported.").

Here, Mr. Mills testified that he estimated the profits Google could have derived from the patented technology. A3751 160:3-7. Just as in *VirnetX*, Mr. Mills started with a baseline assumption that the parties would split profits 50-50 if equal in bargaining power:

> if you assume that the parties had equal bargaining power when negotiating over that profit, you might expect that the parties would split that profit equally. So this depicts that situation where you have a patent owner receiving 50 percent and the licensee receiving 50 percent in a situation where they both have equal bargaining power.

A2588 45:1-8.[6] He then adjusted the split to reflect his conclusion that Google would have been in a better bargaining position than SimpleAir, and chose 30% for the share of profit to SimpleAir. A2588 45:9-24. Mr. Mills pointed to nothing in the past practices of the parties, or in the broader

[6] During the re-trial on damages, Mr. Mills did not even offer an explanation for his 50-50 starting point, providing only *ipse dixit* conclusory statements. A3751 160:3-7.

industry, to support his choice. He offered no quantitative analysis. His opinion was nothing more than speculation and guesswork.

Mr. Mills' analysis is functionally indistinguishable from the methodology this Court rejected in *VirnetX*, and like that defective theory, Mr. Mills' per-unit royalty theory does nothing to correct the "essentially arbitrary" nature of his figures. *See Uniloc*, 632 F.3d at 1313; *see also LaserDynamics*, 694 F.3d at 69 ("This complete lack of economic analysis to quantitatively support the one-third apportionment echoes the kind of arbitrariness of the '25% Rule' that we recently and emphatically rejected from damages experts."). The district court merely glossed over these authorities, finding in a footnote that Mr. Mills did not rely on a "rule of thumb." A21 n.5.

For these reasons, Mr. Mills' per-unit-royalty theory should not have been admitted and is insufficient to support the damages verdict.

B. SimpleAir's Settlement Theory Was Based On The Unreliable Microsoft Settlement And Multiple Speculative Leaps.

SimpleAir's second damages theory was based on the Microsoft Settlement executed just seven weeks before trial. Microsoft, a co-defendant, settled on November 25, 2013. Microsoft agreed [redacted] A3769-70

11:19-12:21. Despite the obvious differences between the Microsoft Settlement and the historical documents relevant to the value of the technology, Mr. Mills used it to "extrapolate" the fee that Google would have agreed to in a hypothetical negotiation in May 2010. Furthermore, in his extrapolation, he relied on a comparison of worldwide data on requests for sending messages, necessarily making speculative leaps in applying that data the extent of infringing use. Mr. Mills opined that Google would have paid $127 million under his settlement theory.

1. A Settlement Agreement Obtained On The Eve of Trial Is Unreliable And Prejudicial.

Settlement agreements "that are tainted by the coercive environment of patent litigation are unsuitable to prove a reasonable royalty." *LaserDynamics*, 694 F.3d at 77-78 (probative value of settlement agreement "executed shortly before a trial" reflected "not the value of the claimed invention but the strong desire to avoid further litigation"); *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 523 (Fed. Cir. 2012) (upholding district court's exclusion of expert's reliance agreements obtained during litigation as "not sufficiently probative"). Nevertheless, on November 27, just two days after the settlement, SimpleAir served a supplemental expert report, now relying heavily on the Microsoft Settlement. A11471-84. Thus Mr. Mills was preparing his supplemental report while SimpleAir was

negotiating the Microsoft Settlement. The Microsoft Settlement is not a historical document, probative of what a willing licensee would have agreed to pay. It is just the opposite; it is no more reliable than statements made in litigation.

Mr. Mills failed to justify the agreement's [redacted] as reflective of a licensing practice in place at the time of the hypothetical negotiation. Rather, the inevitable conclusion is [redacted]. Of the thirteen other SimpleAir agreements in evidence, [redacted] A11920, A11935, A11951, A11963, A11977, A11986, A11996, A12005, A12026, A12038, A12048, A12059, A12074.

As in *LaserDynamics*, this is not a case in which this settlement is "the most reliable license in [the] record." 694 F.3d at 77 (quoting *ResQNet.Com v. Lansa*, 594 F.3d 860, 870-72 (Fed. Cir. 2010)). Rather, it was one just of many agreements SimpleAir has executed. The Microsoft Settlement was executed about three and one half years after the May 2010 hypothetical negotiation date, A3733-34 142:24-143:9, rendering it less

relevant to the *Georgia-Pacific* analysis of a reasonably royalty rate. 694 F.3d at 78 ("in light of the changing technological and financial landscape in the market for ODDs, the BenQ settlement, entered into a full three years after the hypothetical negotiation date, is in many ways not relevant to the hypothetical negotiation analysis."). The jury heard evidence about several other agreements, including those with [redacted] A3925 50:13-20; A3930-31 55:24-56:5; A3903 28:6-12. Mr. Mills' opinion based on the Microsoft Settlement should not have been allowed.

2. Mr. Mills Further Relied On Speculative Assumptions.

SimpleAir compounded the error of relying on the Microsoft Settlement by failing to provide evidence to support Mr. Mills' conclusions about a hypothetical negotiation with Google. Mr. Mills' calculations relied on speculative assumptions to wildly inflate the payment for the '914 patent from that in the Microsoft Settlement. But patent damages must be based on more than mere speculation. *Lucent Tech.*,580 F.3d at 1310.

In order to measure the difference in Microsoft's and Google's respective "extent of use" of the invention, Mr. Mills looked at worldwide data on messaging requests for both Google's and Microsoft's accused systems. He testified that [redacted] A3767 9:4-12. Mr. Mills calculated a ratio of Microsoft's and Google's worldwide requests to send messages. But that data included an unknown number of noninfringing uses for each party. Not all of the ***worldwide*** data is tied to purely ***domestic*** use, as required for infringement of a method claim, and not all ***requested*** messages are ***delivered*** to users' devices, as is required by the steps recited in the claims. In multiplying Microsoft's payment by a factor based on the calculated ratio of Microsoft's and Google's worldwide requests, Mr. Mills necessarily speculated that Microsoft's and Google's message systems have the same proportions of (1) entirely domestic use and (2) delivered messages. There was no evidence to support either assumption.

Worldwide usage data is inappropriate here because a method patent is only infringed if each step of the method is performed within the United States. *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1318 (Fed. Cir. 2005). Yet, Mr. Mills relied on worldwide data to "extrapolate" the fee

that Google would pay based on the Microsoft Settlement. A3884 9:13-17. Based on the ratio of worldwide messages processed by Google and Microsoft, respectively, Mr. Mills applied a scaling factor of 40 to inflate the value of the license that Google would have hypothetically paid. A3768 10:4-7. Mr. Mills admitted he made no effort to determine how many of the Microsoft messages were purely domestic and how many occurred at least in part outside the U.S. A3883-84 8:2-9. Rather, Mr. Mills assumed, without support, that Google and Microsoft had equal proportions of worldwide and domestic use.

Mr. Mills calculation impermissibly uses worldwide data, and therefore rests at least in part on non-infringing uses. *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1372 (Fed. Cir. 2013). SimpleAir's response was merely to say, without legal authority, that use of worldwide data for both Microsoft and Google cancels out any legal error. A11880. But even if this Court does not find his calculation is improperly based damages on worldwide usage, it should find that Mr. Mills opinion is too speculative. In *Power Integrations*, this Court found that an expert's use of data that included "no way to distinguish between infringing and noninfringing [units]" necessarily entailed that he relied on the "assumption" that all units infringed, and this "was speculation." *Id*. at

1374. Here, Mr. Mills scaling calculation necessarily speculated that the proportion of Google's domestic versus worldwide message delivery was equal to that of Microsoft's.

SimpleAir cannot defend that speculative leap. Google produced evidence of both its worldwide and domestic usage numbers. That evidence showed [redacted]. A3841-42 48:17–49:4. Mr. Mills, however, ignored this evidence in arriving at his conclusions. SimpleAir's excuse that it did not obtain the relevant data from Microsoft is insufficient, as it is plaintiff's burden to prove damages. *Uniloc,* 632 F.3d at 1315 ("[i]f the patentee fails to tie the [expert's damages] theory to the facts of the case, the testimony must be excluded."); *Lucent Tech.*, 580 F.3d at 1323 ("The burden of proving patent damages falls on the patentee."); *Oiness v. Walgreen Co.*, 88 F.3d 1025, 1031 (Fed. Cir. 1996) ("Any insufficiency in Walgreen's records cannot supplant Oiness's burden" to prove damages).

Next, Mr. Mills further assumed, without any support, that Google and Microsoft had similar rates of undelivered (and thus non-infringing) messages. In a method claim, every step must be performed in order for the patent to be infringed, *see NTP, Inc.*, 418 F.3d at 1318. The '914 claims require that the notification be received at the user's device. A219 33:33-35.

See A3663-64 72:25–73:2 (Dr. Knox admitting that only "messages that were actually delivered to phones in the U.S." infringe). For method claims, damages must be "limited to the proven number of instances of actual infringing use." *Lucent Tech.*, 580 F.3d at 1323. Nevertheless, in extrapolating the value of the Microsoft Settlement, Mr. Mills relied on data that did not measure delivered messages; rather, the data indicated requests. A3767 9:4-12. Google provided unrebutted testimony that up to half of those messages may not even be delivered to the end-user; for example, messages intended for devices that are no longer in use would not be delivered. A3841-42 48:17–49:4. Messages received by Google's accused technology but not delivered do not infringe.

Mr. Mills never attempted to analyze whether Microsoft has a similar proportion of undelivered (and thus non-infringing) messages included in his data. Instead, he assumed without basis that the respective proportions of undelivered messages are the same. As this Court has recognized, "layered assumptions lack the hallmarks of genuinely useful expert testimony." *Power Integrations*, 711 F.3d at 1374 (finding expert opinion improper for unwarranted speculation).

In sum, SimpleAir failed to provide a legally sufficient damages theory. The damages verdict should be reversed, or a new trial ordered excluding both of SimpleAir's improper theories.

CONCLUSION

For the foregoing reasons the judgment should be reversed with instructions to enter a judgment of non-infringement and invalidity and no damages.

Respectfully submitted,

Dated: April 3, 2015

By: /s/ Charles K. Verhoeven

Charles K. Verhoeven
Carl G. Anderson
Bill Trac
QUINN EMANUEL URQUHART & SULLIVAN, LLP
50 California Street, 22nd Floor
San Francisco, CA 94111
(415) 875-6600
(415) 875-6700

Attorneys for Defendant-Appellant Google Inc.

ADDENDUM

TABLE OF CONTENTS

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.	§	
	§	
	§	
vs.	§	**CASE NO. 2:11-CV-0416-JRG**
	§	
	§	
MICROSOFT CORP., ET AL.	§	

MEMORANDUM OPINION AND ORDER

Before the Court are Plaintiff SimpleAir, Inc.'s Opening Claim Construction Brief (Dkt. No. 302), Defendants' Responsive Claim Construction Brief (Dkt. No. 329), and Plaintiff's Reply (Dkt. No. 359).

The Court held a hearing on April 26, 2013.

I. BACKGROUND AND THE PATENTS-IN-SUIT

Plaintiff SimpleAir, Inc. ("SimpleAir") brings this action against nine defendant groups: Microsoft Corp.; Google Inc. and Motorola Mobility LLC; Nokia Inc.; Samsung Electronics Ltd., Samsung Electronics America, Inc., and Samsung Telecommunications America, LLC; Sony Mobile Communications (USA) Inc. f/k/a Sony Ericsson Mobile Communications (USA), Inc.; Ericsson Inc.; Futurewei Technologies, Inc. (d/b/a Huawei Technologies (USA)) and Huawei Technologies Co., Ltd.; HTC America, Inc., and HTC Corporation; and LG Electronics Mobilecomm U.S.A., Inc. (collectively "Defendants"). The action alleges infringement of U.S. Pat. No. 6,021,433 (the "'433 Patent") and U.S. Pat. No. 7,035,914 (the "'914 Patent") (collectively, the "patents-in-suit"). The '914 Patent is based on a continuation application of the

'433 Patent.[1] Both patents assert a priority claim to multiple provisional applications filed in 1996. Both patents have been subject to reexaminations. Claims 1 and 69 of both patents are asserted.

A prior Eastern District of Texas case involved the two patents-in-suit (and two additional patents). A claim construction order was issued in that case on September 2, 2011. *SimpleAir Inc., v. Apple, Inc., et al.*, 2:09-cv-289-CE (Magistrate Judge Everingham) (referred to herein as the *AWS* Order). The parties currently dispute ten groupings of claim terms. Several of the claim disputes raise indefiniteness issues under 35 U.S.C. §112. Many of the claim terms in dispute were addressed in the *AWS* Order.

In general, the '433 Patent and the '914 Patent relate to methods of processing and transmitting internet-based content and real time modifications (e.g., breaking news alerts, financial news, e-mail notifications, sports scores, weather alerts, etc.) to remote computing devices. *AWS* Order at 1. The '433 Patent Abstract explains the invention as follows:

> A system and method for data communication connecting on-line networks with on-line and off-line computers. The present system provides for broadcast of up to the minute notification centric data thereby providing an instant call to action for users who are provided with the ability to instantaneously retrieve further detailed information. Information sources transmit data to a central broadcast server, which preprocesses the data for wireless broadcast. The notification centric portions of data are wirelessly broadcast to wireless receiving devices that are attached to computing devices. Upon receipt of the data at the computing device, the user is notified through different multimedia alerts that there is an incoming message. Wirelessly broadcasted URL's, associated with the data, are embedded in data packets and provide an automated wired or wireless connection back to the information source for obtaining detailed data.

'433 Abstract.

[1] The patents have substantially identical specifications. Citations to the specification will be as 'XXX col:lines.

II. LEGAL PRINCIPLES

A. Claim Construction Principles

"A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent's claims must be read in view of the specification, of which they are a part. *Id*. For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id*. "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's invention. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*,

34 F.3d 1048, 1054 (Fed. Cir. 1994).

This court's claim construction decision must be informed by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (emphasis added) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id*. The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id*. at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to and intended to be read by others skilled in the particular art. *Id*.

Despite the importance of claim terms, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id*. Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." *Id*. at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id*. at 1314-17. As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and

meaning of the language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Phillips, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the Patent and Trademark Office ("PTO") understood the patent. *Id.* at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319-24. The approach suggested by *Texas Digital*—the assignment of a

limited role to the specification—was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id*. at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id*. at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id*. The definitions found in dictionaries, however, often flow from the editors' objective of assembling all of the possible definitions for a word. *Id*. at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id*. at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

B. Claim Indefiniteness

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. Whether a claim meets this definiteness requirement is a matter of law. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1344 (Fed. Cir. 2007). A party challenging the definiteness of a claim must show it is invalid by clear and convincing evidence. *Id*. at 1345.

"Only claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1250 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton*, 514 F.3d at 1249-50. The ultimate issue is whether someone working in the relevant technical field could understand the bounds of a claim. *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 783 (Fed. Cir. 2010).

> In determining whether that standard is met, i.e., whether the claims at issue are sufficiently precise to permit a potential competitor to determine whether or not he is infringing, we have not held that a claim is indefinite merely because it poses a difficult issue of claim construction. We engage in claim construction every day, and cases frequently present close questions of claim construction on which expert witnesses, trial courts, and even the judges of this court may disagree. Under a broad concept of indefiniteness, all but the clearest claim construction issues could be regarded as giving rise to invalidating indefiniteness in the claims at issue. But we have not adopted that approach to the law of indefiniteness. We have not insisted that claims be plain on their face in order to avoid condemnation for indefiniteness; rather, what we have asked is that the claims be amenable to construction, however difficult that task may be. If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds. . . . By finding claims indefinite only if reasonable efforts at claim construction prove futile, we accord respect to the statutory presumption of patent validity . . . and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.

Exxon Research & Eng'g Co. v. U.S., 265 F.3d 1371, 1375 (Fed. Cir. 2001) (citations and internal quotation marks omitted).

C. Construing Claim Terms that Have Previously Been Construed by This or Other Courts

As indicated above, it is worth noting that this is not the first opportunity for this Court to construe the patents-in-suit. *See AWS* Order. Although the disputes in this case present many of the same issues that have already been resolved in the case mentioned above, the Court still carefully considered all of the parties' arguments (both the new and repetitive arguments) in construing the claims in this case. *See Burns, Morriss & Stewart Ltd. P'ship v. Masonite Int'l Corp.*, 401 F. Supp. 2d 692, 697 (E.D. Tex. 2005) (describing that although a previous construction may be instructive and provide the basis of the analysis, particularly when there are new parties and those parties have presented new arguments, the previous construction is not binding on the court). As indicated by *Burns*, however, the previous constructions in those cases, and particularly from those in this District, are instructive and will at times provide part of the basis for the analysis. *See id.*

IV. CONSTRUCTION OF DISPUTED TERMS

A. "whether said computing devices are online or offline from a data channel associated with each device" ('914 Claim 1)

The parties propose a construction for portions of the term in question and for the entire term.[2]

"data channel"

Plaintiff's Proposed Construction	Defendants' Proposed Construction
one or more communication channels or paths for accessing or viewing a category or subcategory of information that is provided by an information source over a communications network	any path between the remote computing device and the Internet (or some other online service) through which information can flow to or from the remote computing device and that does not include the path

[2] Defendants also seek construction of "offline from a data channel associated with each device" to mean "not connected to the Internet (or some other online service) via 'a data channel associated with each device.'" As Defendants' construction is repeated in their construction of the phrase as a whole, the Court shall address such dispute in context of the entire phrase.

	between the remote computing device and the attached receiver Microsoft's Compromise Construction: any communication path between the remote computing device and the Internet (or some other online service) that does not include the attached receiver

Whole term: "whether said computing devices are online or offline from a data channel associated with each device"

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
whether the remote computing devices are or are not connected via the Internet or another online service to a data channel associated with each computing device at the time the preprocessed data is received by the receivers Additional clarification: A device is not online to an associated data channel merely because it is able to receive data transmissions (directly or indirectly) from the central broadcast server.	whether said devices are or are not connected to the Internet (or some other online service) via "a data channel associated with each device" Microsoft's Compromise Construction: whether the remote computing device are or are not connected to the Internet (or another online service) via a data channel associated with each computing device at the time the preprocessed data is received by the receivers Additional clarification: [Defendants: not necessary] Microsoft's Compromise Proposal: A device is online to an associated data channel if it is able to receive data transmissions through the data channel and is offline from an associated data channel if it is unable to receive data transmissions through the data channel.

There are several disputes between the parties with regard to these terms. First, the parties dispute whether the "data channel" may merely be the first connection point to the Internet (the first hop) that is used to access the Internet (Defendants) or whether the "data

channel" is the path to an information source (SimpleAir). Defendants also assert that the data channel cannot include the path through the receiver. The parties also dispute whether the standard Internet connection must be disconnected when receiving "pushed" data. For example if the data channel can be a web broadcasting channel (SimpleAir's position), the parties dispute whether the claim allows being connected to the Internet with a single connection (an always connected Internet connection for example) in which the user is just disconnected from one web broadcasting channel but is still pushed data from that channel through the Internet connection which is on. This dispute is manifested in the parties' "to" / "via" language as to whether the computing devices "are or are not connected to the Internet" (Defendants) verses "are or are not connected via the Internet to a data channel."

"data channel"

1. Parties' Positions

SimpleAir cites to its expert declaration to assert that a "data channel" invokes a television channel metaphor. SimpleAir asserts that Internet broadcasting of information is one of the specific fields of the invention and that the *AWS* Order recognized this. Dkt. 302 at 22-23 (citing '433 Abstract). SimpleAir objects to Defendants' construction of "data channel" as ignoring the specific sense that the term was known in the field of the invention. SimpleAir further asserts that Defendants' construction ignores the claim language which states the "data channel" is "associated with each device." Dkt. 302 at 25, n. 17. SimpleAir objects to Defendants' construction for merely reducing the invention to whether or not a device is connected to the Internet. SimpleAir asserts that this is the exact same result that the *AWS* defendants sought, a result which was rejected in the *AWS* Order. Dkt. 302 at 25-26 (citing *AWS* Order at 34).

Defendants assert that their construction clarifies that a "data channel" cannot encompass the alternative broadcast path between the remote computing device and the attached receiver. Dkt. 329 at 4. Defendants first note that "data channel" was never used in the specification and that, as agreed by the parties, the single use of "channel" refers to an unrelated kind of channel. Dkt. 329 at 5. Defendants assert because "data channel" is not defined or used in the specification, the Court should look to the context of the alleged invention to determine the construction. Defendants assert that the specification provides for two paths to the remote computing device, one path on the left of Figure 1 (such as through connection 24) and a second alternative path on the right of Figure 1 (such as through receiver 32). Defendants assert that the data channel corresponds to the data path on the left side of Figure 1. Defendants assert that this path is the standard internet connection that in 1996 could typically be "online" or "offline" by using dial-up modems. Dkt. 329 at 5-6. Defendants assert that the crux of the invention is that information can be received through receiver 32 through the always-available alternative path even when the remote computing device is "offline" through connection 24. Dkt. 329 at 6-7. Defendants assert that the second alternative route cannot be part of the recited "data channel" because the claims require the computer to receive data even when the "data channel" is offline.

Defendants object to equating "data channel" to a webcasting channel. Defendants assert that "internet broadcasting" or "webcasting" is never mentioned in the specification. Defendants further cite to SimpleAir's expert's admission that "data channel" being used in the context of "internet broadcasting" did not begin until after the patent filings. Dkt. 329 at 8. Defendants also assert that the term "data channel" was first added to the claims eight years after the priority data. Defendants assert that the disagreement of the experts and the variety of meanings in the

extrinsic evidence renders the term ambiguous and indefinite under 35 USC §112. Dkt. 329 at 8-9.

In reply, SimpleAir asserts that Defendants' construction of "data channel" is simply a path that leads to the Internet. SimpleAir asserts that Defendants replace the claimed "from a data channel" with "via." SimpleAir asserts that Defendants are attempting to construe "data channel" as merely the initial hop from the device to the Internet. Dkt. 359 at 1. SimpleAir asserts that a data channel is a particular destination. SimpleAir also asserts that the *AWS* construction found that "a" may mean "one or more" and thus the device may be associated with more than one channel. SimpleAir asserts that the device may be online to one channel but not to another channel. Dkt. 359 at 2.

SimpleAir asserts that Defendants' construction of "data channel" renders the surrounding claim language superfluous. SimpleAir asserts that because the parties agree that "online or offline" refers to a device's Internet connection, the "from a data channel" language cannot simply refer, again, to whether a device is connected to the Internet. Dkt. 359 at 2. SimpleAir asserts that Defendants' proposal reduces the claim to "whether a device is or is not connected to the Internet through a connection to the Internet." Dkt. 359 at 2. SimpleAir similarly asserts that Defendants' construction of "data channel" renders superfluous the claimed "associated with each device" language. In addition, SimpleAir asserts that it expressly affirmed the SimpleAir construction in the reexamination record. Dkt. 359 at 4.

As to Defendants' contention that the data channel's path cannot include the "receiver," SimpleAir asserts that the '914 claims do not recite a "receiver." In addition, SimpleAir asserts that there is no disclaimer that precludes the "data channel" path from running through the receiver. Dkt. 359 at 5-6.

2. Analysis

The *AWS* Order explains how, in the context of the specification, a data channel is not merely a network connection or path between the computing device and the Internet:

> The specification explains that "on-line services and other information sources, provide data feeds, including real time data feeds" to the central broadcast server regarding, for example, "news, sports, and financial stories." '433 Patent at 7:44-54. "[A] user can register and subscribe to receive broadcasts" of these data feeds from the central broadcast server, which maintains a "subscriber database...to determine which subscribers receive which types of content." *Id*. at 8:20-25. The specification explains that the user is able to specify "preferences at information category or specific content levels" and can even select "subcategories of information within a particular information category." *Id*. at 21:21-32. Thus, when data for a particular feed is available, it is "broadcast to the preferred viewer" application on the user's remote computing device. *Id*. at 26-15-17.

AWS Order at 33. The information sources 12 may include a variety of categories of information such as news feeds, email feeds, premium service feeds and graphic feeds. '433 Figure 1`, 6:28-30. The patents are also directed toward the broadcasting of these feeds. '433 Abstract, 5:53-55. In this context, data channel is not limited as Defendants seek. Rather, access to the content within the information sources 12 is what is important. Thus, within the patents, the connection 24 provides the remote computer 14 access to the information sources 12. '433 30:55-31:14. The connection 24 is not limited to a connection to the Internet but rather it is a "connection 24 back to the information source 12 to obtain more detailed information." '433 30:62-63. Thus, in use, the connection is provided to "automatically establish a link back to the information source 12." '433 31:2-3. As such, the specification supports SimpleAir's construction and is not merely limited to the first path or connection between the remote computer and the Internet as advocated by Defendants. In addition, the claims themselves also provide support for SimpleAir's positions. As described below, with regard to the construction of the whole phrase at issue,

Defendants' construction is further contradicted when placed in the context of the entire phrase. The Court adopts SimpleAir's construction, which matches the *AWS* construction.

The Court construes "data channel" as **"one or more communication channels or paths for accessing or viewing a category or subcategory of information that is provided by an information source over a communications network."**

"whether said computing devices are online or offline from a data channel associated with each device"

1. Parties' Positions

SimpleAir asserts that "offline" means "not connected to the Internet or some other on-line service" and "online" means "connected to the Internet or some other on-line service" quoting the specification passage:

> Another advantage of the present invention is that a remote computer 14 can receive information instantly even while it is off-line (i.e. not connected to the Internet or some other on-line service.)

Dkt. 302 at 22 (quoting '433 6:61-64). SimpleAir asserts that a device is not "online" to an associated data channel merely because it can receive data transmissions (directly or indirectly) from the central broadcast server. SimpleAir asserts that the *AWS* Court correctly found that such interpretation would not make sense. SimpleAir quotes the *AWS* Court as stating that the mere ability to receive transmissions from the central broadcast server cannot mean the device is "online" because that would "render the 'instantaneous notification' of both online and offline devices nonsensical." *AWS* Order at 37.

As to "on-line" and "off-line," Defendants cite SimpleAir's brief to note that SimpleAir agrees the terms mean "connected to the Internet or some other online service" and "not connected to the Internet or some other on-line service" respectively. Defendants assert that SimpleAir however changes its construction from "not connected **to**" to "not connected **via.**"

Dkt. 329 at 9-10. Defendants assert this change conflicts with the specification quote noted by SimpleAir above. Dkt. 329 at 10 (citing '914 5:65-6:14, 7:6-7, 31:34-38). Defendants assert that SimpleAir's construction confusingly suggests that the user can use the Internet to connect to the data channel and that the data channel may also be a path involving the receiver. Dkt. 329 at 10. Defendants assert that SimpleAir's construction requires the computing device to be connected to the Internet to receive notifications, in contrast to the specification embodiments in which notifications are received when not connected to the Internet. Dkt. 329 at 10 (citing '914 7:4-13). Defendants assert that requiring the remote computing devices to be connected to the Internet is wholly inconsistent with the specification and cannot be correct.

Defendants object to SimpleAir's "explanatory sentence" within the construction. Defendants state that this sentence is not always correct because under SimpleAir's construction, Internet traffic and notification traffic both flow through the same path (the Internet connection). In such case, a remote computing device would not receive notification unless it was online. Defendants assert that SimpleAir's construction collapses both paths into a single connection so SimpleAir manufactures on "offline" condition with the explanatory sentence even when there is only one path (Internet connection) that is on-line and connected. Dkt. 329 at 12. Defendants assert that its construction affirms a core advantage of the patent: that data may be received by receivers whether or not the computing device is online or offline. Dkt. 329 at 12.

In reply, SimpleAir asserts that merely importing the verbatim definition of "online or offline" would have rendered the claim confusing. Dkt. 359 at 6. SimpleAir asserts the prior Court's use of "via" properly reflects that "online/offline" refers to the device's Internet connection and "from a data channel" refers to what that connection is being used to do (access a data channel). SimpleAir asserts that the clarification language is necessary to explain that a

connection to the central broadcast server (which sends notifications), is not the same as being online to a data channel. Dkt. 359 at 7. SimpleAir also asserts that Defendants' construction provides the same meaning to three sub-phrases that are found within the term at issue: "online or offline," "online or offline from a data channel," and "online or offline from a data channel associated with each device."

2. Analysis

The specification provides a statement as to the meaning of "online" and "offline."

> Another advantage of the present invention is that a remote computer 14 can receive information instantly even while it is off-line (i.e. not connected to the Internet or some other on-line service.)

'433 6:61-64). The parties acknowledge the importance of this passage but interpret the consequences differently. Under Defendants' positions, the data channel and the initial connection (first hop) to the Internet are one and the same. Under such a construction, when "online and offline" is combined with the additional subsequent claim language of "from a data channel associated with each device," no additional meaningful limitation is provided by the additional language. More particularly, Defendants construe online and offline to mean connected or not to the Internet and Defendants construe the data channel to merely be the device's connection to the Internet. Defendants' constructions thus render the additional language redundant.

Phillips counsels the importance of the claim language. Here, the claim language itself and the interaction of different portions of the claim language can provide significant guidance. The term in question includes both "online or offline" and "from a data channel associated with each device." As described above, the specification teaches that a data channel is the path to the information source which contains the content. It is in this context that the specification

language at '433 6:61-64 must be considered. Combining the two concepts, the claim language makes clear that what is claimed is that an Internet connection is or is not made to the data channel. It is not merely a connection to the Internet that is being claimed but a connection with the data channel (the path to the content of the information source). The *AWS* construction accords recognition to the interplay of the claimed words and the resulting effect. Meaning is provided to the combination of "online and offline" and "from a data channel associated with each device." As to the "clarifying sentence", the specification is clear that data may be received from the central broadcast server independent of a direct connection to the information sources 12. '433 5:20-7:3. The clarifying sentence ensures the understanding of this concept within the construction. The Court adopts the *AWS* construction.

The Court construes "whether said computing devices are online or offline from a data channel associated with each device" to mean **"whether the remote computing devices are or are not connected via the Internet or another online service to a data channel associated with each computing device at the time the preprocessed data is received by the receivers."** A device is not online to an associated data channel merely because it is able to receive data transmissions (directly or indirectly) from the central broadcast server.

B. "receivers" ('433 Claim 1; '914 Claim 1)

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
no construction necessary	a device attached to the remote computing device for receiving said preprocessed data even when said remote computing device is not connected to the Internet (or some other online service)

The primary dispute between the parties is whether the receiver and the remote computing device need to be in separate or different machines and whether the receiver receives data "even when said remote computing device is not connected to the Internet."

1. Parties' Positions

SimpleAir asserts that the ordinary meaning of a receiver does not match Defendants' construction and that there is no disclaimer in the specification disavowing the full scope of the ordinary meaning of "receiver." SimpleAir asserts that Defendants' "a device attached to the remote computing device" is thus not supported. SimpleAir asserts that the specification states "the present invention may be implemented on other computer systems and configurations, including but not limited to Macintosh or Unix computers, televisions, telephones, appliances and so forth." '433 at 7:30-36. SimpleAir asserts that this passage supports configuring the computing device and receiver in the same device or product. SimpleAir asserts that it agrees that "the receiver and the remote computing device are separate structures and one is not a 'subcomponent' of the other." Dkt. 359 at 9. SimpleAir asserts that the actual dispute is whether the two structures must be in entirely different machines. SimpleAir asserts there is no disclaimer requiring such different machines. Dkt. 359 at 9.

Defendants assert that the claims themselves require the receiver and the computing device to be separate, as the claim states "transmitting preprocessed data to receivers communicating with said devices." Dkt. 329 at 13. Defendants assert that the patentee explicitly chose such language as opposed to "transmitting preprocessed data to said devices." Defendants cite to the specification which states "wireless receiving devices which are attached to computing devices" and "wireless receiving devices which are attached to personal computers." '914 Abstract and 2:62-66. Defendants also cite to Figure 1.

Defendants assert that SimpleAir's position is not supported by the claim language. Defendants assert that the specification citation provided by SimpleAir refers to alternative embodiments for the computing device 14, not the receiver 32. Defendants assert that the specification consistently refers to separate devices. Defendants assert that SimpleAir's construction excludes the preferred embodiment because the receiver could not receive information if the receiver is in the computing device and the computing device is offline. Dkt. 329 at 16. Defendants assert that the language "even when said remote computing device is not connected to the Internet" is central to the claimed invention. Defendants assert that such language clarifies that the receiver may receive data whether the remote computing device is online or offline. Dkt. 329 at 15.

2. Analysis

The parties do not assert that "receiver" is ambiguous or that the term does not have an ordinary meaning known to one in the art. The parties do not dispute that the "receiver" and the "remote computing device" as presented in the claims are separate devices. Defendants have pointed to passages in the specification that indicate that the devices in the disclosed embodiments are in different structures. Defendants assert that the claimed receiver must thus be limited to the disclosed embodiment. However, Defendants have not pointed to a disclaimer or disavowal that the separate devices must be formed in entirely different structures. *See Phillips*, 415 F.3d at 1316 (claim scope may be limited by a disclaimer or disavowal). Moreover, the specification refers to the wireless receiver 32 interacting with a receive card in the remote computing device or through the use of the computer serial port. '433 7:27-30. The next sentence in the specification then describes that "the invention" is not limited to the "particular configuration discussed above" and the specification then states that the invention may be implemented in other configurations such as televisions, telephones, appliances and so forth.

'433 7:30-35 ("Rather, the present invention may be implemented on other computing systems and configurations, including but not limited to Macintosh or Unix computers, televisions, telephones, appliances and so forth.") Thus, the specification itself implies that configurations other than the illustrated remote computing device and wireless receiver are contemplated. As such, not only is there no disavowal requiring the limitations sought by Defendants, the specification provides support for rejecting Defendants' limitations.

Moreover, the claims themselves describe the relationship between the receiver and the remote computing devices. The claims state the receivers "communicating with said computing devices [said devices]. '433 Claim 1 ['914 Claim 1].

As to the connection to the Internet language, some claims themselves provide for what must be "online" and "offline." In particular, other claim language relating to the computer devices explicitly references the limitations as to the computer devices being online or offline from the data channel. '914 Claim 1 ("whether said computing devices are online or offline from a data channel"). Thus, the claims themselves counsel against incorporating Defendants' limitation within the otherwise understandable plain meaning of "receiver."

The Court finds that "receiver" needs no construction.

C. Remote Computing Device Terms[3] ('433 Claim 1; '914 Claim 1)

Plaintiff's Proposed Construction	**Defendant's Proposed Construction**
no construction necessary	a consumer electronics device such as a computer, television, telephone, or appliance.

The underlying dispute between the parties has some overlap with the issues with regard to "receivers." In addition, the parties dispute whether the device is limited to a consumer

[3] The parties agree that "remote computing devices," "remote devices," "selected remote devices," "devices," and "computing devices" should be treated similarly, and that the term "remote computing device" shall represent all of these terms. Dkt. 363 at 1.

electronics device. At the claim construction oral argument, Defendants also emphasized that the remote computing device could not be subcomponent such as a microprocessor.

1. Parties' Positions

SimpleAir objects to Defendants' construction as being an attempt to construe the term in a manner that would preclude SimpleAir from identifying separate components in items such as smartphones as being the "remote computing device." For example, SimpleAir asserts the remote computing device may be the phone CPU and the receiver, which is the radio and Wi-Fi receiving circuitry. Dkt. 302 at 20. SimpleAir asserts that it is undisputed that the ordinary meaning of "remote computing device" is broader than Defendants' construction. SimpleAir also asserts that it is well known that a device may be a subcomponent within another device. SimpleAir also asserts that there is no reason to substitute "consumer electronics" for "remote computing." SimpleAir asserts that there is nothing in the specification that precludes the remote computing device and the receiver from being subcomponents of the same device. SimpleAir asserts that the specification quote 7:30-36 supports a reading that the "other configurations" may be televisions, telephones and appliances and such devices are not "computer systems" (thus supporting a computer system being a subcomponent of such configurations).

Defendants assert the specification teaches that the "remote computing device" is a device, not a sub-component of another device. Defendants cite to the disclosure of a personal computer and the alternative "Macintosh or Unix computers, televisions, telephones, appliances and so forth." '433 at 7:35-36. Defendants assert that the specification discloses the "remote computing device" as having sub-components (processor, memory, and disk), not the computing device being a sub-component itself: "The user computer 14 of the present invention includes a microprocessor connected to a system bus and supported by a read only memory (ROM) and random access memory (RAM)." '433 7:4-7. Defendants further assert that the claims include

limitations that indicate a microprocessor alone would not be the remote computing device. In particular, Defendants note that '433 claim 1 includes a data channel associated with the remote computing device and includes the concept of a remote computer device being "online" to the Internet. Defendants assert that a microprocessor alone is incapable of making such connections. Defendants also point to the limitations of '433 claim 12 which requires a user to "click on said computing device"; '914 claim 26 which requires "providing an alert panel on a display of each of said devices"; and '433 claim 69 which requires "displaying contextual graphics on said computing device."

2. Analysis

As described above with regard to "receiver," the passage at '433 7:30-35 is broader than Defendants interpret it. The passage makes no limitation that the "remote computing device" need be limited to a consumer electronics device. Rather, the specification citation in question references the invention being encompassed in a "Unix computer." Defendants have provided no evidence that Unix computers are limited to consumer devices. Defendants have not pointed to any disclaimer or disavowal that limits the term to consumer devices or to the particular devices listed in the passage.

The specification provides a very broad reference to a remote computing device: "The user computer 14 of the present invention includes a microprocessor connected to a system bus and supported by read only memory (ROM) and random access memory (RAM) which are also coupled to the system bus." '433 7:4-7. As noted, "the present invention is not limited to the particular configuration discussed above." '433 7:31-32. Thus, the computing device as described in the specification is described in the simple terms of a processor and memory, which may be configured differently. There is no disavowal or disclaimer in the specification stating that the various computing components must be formed in separate structures. It would seem

natural that integration could be another "configuration" of the various computer components. Further, the passage describes the availability of alternative "configurations" after a description of the computer 14 and receiver 32. 7:4-36. Thus, those alternative configurations are not merely limited to alternative configurations of the computer but other configurations for the computer and receiver. As to the other elements of claim 1, Defendants' arguments are arguments focused on infringement, not the meaning of "remote computing device." As to the dependent claims, the fact that the dependent claims call out additional features such as a clicking function or a display does not support the proposition that such elements must be read into the independent claims. Such logic contradicts the very purpose of dependent claims. Defendants have not pointed to evidence in the intrinsic record supporting the incorporation of the specification embodiments sought in Defendants' construction.

The Court finds that "remote computing device" needs no construction.

D. "whether said remote computing devices are on or off" ('433 Claim 1)

Plaintiff's Proposed Construction	Defendant's Proposed Construction
no construction necessary	whether said remote computing devices are powered on or powered off.

The parties' dispute focuses on whether the construction should explicitly reference "powered" on or off.

1. Parties' Positions

SimpleAir asserts that the *AWS* Order rejected SimpleAir's assertion that "on" or "off" was shorthand for "online" and "offline." SimpleAir asserts that it accepts the prior Court ruling and agrees with the *AWS* Order that no construction is needed. SimpleAir asserts that "on" or "off" may include "powered on and off" but is not so limited. Dkt. 302 at 26. SimpleAir asserts that Defendants are merely adding limitations ("powered") to the existing claim language. At

the claim construction hearing SimpleAir acknowledged that the term related to the powered status but expressed concerning that Defendants' construction required the act of powering.

Defendants assert that the *AWS* Order stated "the patentees intended the words 'on or off' to mean powered 'on or off.'" *AWS* Order at 31. Defendants assert that SimpleAir's statement that "on or off" is not limited to "powered on or off" contradicts the intrinsic record. SimpleAir cites to the '914 Patent prosecution in which the May reference was distinguished on the basis that the remote computing device does not need "to be turned on" to receive a notification. Dkt. 329 at 26.

2. Analysis

The *AWS* Order provides a discussion as to the Examiner's rejection based on the May reference. *AWS* Order at 30-31. The applicants attempted to distinguish the reference based on argument that "[t]he claimed invention does not require the remote computing device to be turned on upon receipt of preprocessed data, whereas May does require the remote device to be turned on upon receipt of preprocessed data." '914 Amendment Dated 12/12/2002 at 15. The *AWS* Court's conclusion was that such prosecution history shows that "these statements make clear that the patentee used the term 'on or off' consistent with the ordinary meaning of 'on' and 'off' – that is, powered on or off." *AWS* Order at 31. The *AWS* Court's analysis applies to the parties' current dispute. This Court finds such conclusion still applicable. Moreover, reexamination statements made after the *AWS* Order are consistent with such a conclusion. In the '433 Reexamination, the patentees stated in their Declaration of Prior Inventorship with regard to the notification received by the computing devices:

> That notification would occur whether the computing device was on or off because the receiver card had its own power source (batteries). In other words, the receiver did not rely upon the power from the remote computing device and

> therefore the receiver was able be on [sic] to receive messages and notify the computing device of their receipt even when the computing device was off.

'433 Reexamination, Declaration of Prior Inventorship Dated February 1, 2013 at 38. During oral argument, SimpleAir provided no explanation as to anything else the claim term could mean. However, through SimpleAir's "no construction," SimpleAir apparently intends to provide some other meaning to the term. The *AWS* Order found that the ordinary meaning of on and off included the powered on and off concept, thus no further construction was required. However, given the dispute presented by the parties in the pending action, the Court shall adjudicate the competing constructions. *See O2 Micro Intern. v. Beyond Innovation Technology*, 521 F. 3d 1351, 1361-62 (Fed. Cir. 2008).

The Court construes "whether said computing devices are on or off" to mean **"whether said computing devices are powered on or powered off."**

E. "information source" ('433 Claim 1; '914 Claim 1)

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
one or more content or on-line service providers that provide data to the central broadcast server, such as an online source of news, weather, sports, financial information, games, personal messages or e-mails.	the Internet or one more content or online service providers that provide data to the central broadcast server, such as an online source of news, weather, sports, financial information, games, personal messages or e-mails.

The parties' dispute focuses on whether the proper construction should include the "Internet" as an information source or whether the Internet is merely the network where sources may be found, not a source itself.

1. Parties' Positions

SimpleAir asserts that Defendants add "the Internet" to the beginning of the *AWS* Court's construction. SimpleAir asserts that Defendants' construction would be improper as it would be satisfied by merely pointing to the Internet rather than a content provider or service provider on

the Internet. SimpleAir asserts that the specification teaches that information sources are located on the Internet rather than a source being the Internet itself. SimpleAir points to the specification passage "extending the reach of existing information sources, such as Internet and on-line services." '433 3:17-22. SimpleAir also points to Figure 2 which includes "Internet on-line services & information providers." SimpleAir indicates that these passages use Internet as a modifier as to the source, not that the source itself is the Internet. Dkt. 302 at 4. SimpleAir also points to the citations which provide that notifications include Internet addresses that allow the remote computing device to connect to the relevant information source. Dkt. 302 at 4-5 (citing '433 3:32-36, 30:64-31:3). Additionally, SimpleAir points to Figure 12 which references "the information source on the Internet," and the '914 dependent claim 9, which describes the "information source" as something located on the network at "an Internet address." SimpleAir thus asserts that the Internet is not an information source, but rather the communication network or medium over which data may be transmitted. SimpleAir cites to '433 1:53-56 as stating that the Internet provides "a linkage of interconnected computer systems which can share information almost instantaneously" and '433 8:64-9:1 which states "the information to be transmitted over another medium, such as the Internet.

Defendants assert that the prior Court did not address this dispute. Defendants assert their construction is supported in the specification: "[as] is illustrated in FIG. 1, information sources 12, such as the Internet, on-line services and other information sources" and "such as news headlines from information sources 12, such as Internet, on-line services and other information providers." '914 7:54-55, 31:24-27. Defendants assert that these passages teach that the Internet may also be an information source. Defendants assert that although the specification sometimes refers to content providers as an information source, the specification does not restrict

the term to only "content providers" as the passages cited above demonstrate. Dkt. 329 at 17-18. Defendants also point to the legend in the information sources 12 block of Figure 2 which reads "INTERNET ON-LINE SERVICES & INFORMATION PROVIDERS." Finally, Defendants cite to the '914 prosecution in which the patentee stated that "some other on-line services" are "some other service that is online (i.e. a service that is not the Internet but is like it), such as AOL or CompuServe." Dkt. 329 at 18 (quoting Ex. 7 at 9-10).

2. Analysis

The specification uses the term "Internet" in somewhat differing manners. Thus, passages such as at '433 1:53-56 and '433 8:64-9:1 (and others cited by SimpleAir) reference the Internet in the context of the physical medium, wires or "linkage of interconnected computer systems." This is a meaning that emphasizes the context of the hardware itself. Elsewhere, the specification uses the term Internet more as a description of an information source: "information sources 12, such as the Internet, on-line services and other information sources" ('433 7:43-45) and "such as news headlines from information sources 12, such as Internet, on-line services and other information providers" ('433 at 30:58-60). However, in the context of the intrinsic record as a whole, it is clear that passages at '433 7:43-45 and 30:58-60 are not equating the physical medium itself to being an information source of data. To clarify, the network by itself is not information, but rather the content on the network is the information. Thus, in context of '433 30:58-60, "news headlines" is content found on the Internet. The physical medium of the Internet, absent content, is not a source of "news headlines." The term in question is "information source." To include "Internet" in the term "information source" and then allow an interpretation of "Internet" to extend to a mere network connection (without any access to a source of information), would eviscerate the meaning of "information source."

The Court construes "information source" to mean **"one or more content or online**

service providers that provide data to the central broadcast server, such as an online source of news, weather, sports, financial information, games, personal messages, or e-mails."

F. "parsing said data with parsers corresponding to said [central broadcast server] / [servers]" ('914 Claim 1; '433 Claim 1)

Plaintiff's Proposed Construction	**Defendant's Proposed Construction**
"parsing said data with parsers": using computer software to break or divide data received from an information source into components whose content or format can be analyzed, processed, or acted upon Note: In SimpleAir's Reply at 10, n. 8 SimpleAir proposed: using multiple computer software programs, routines, or functions to break or divide data received from an information source into components whose content or format can be analyzed, processed or acted upon.	breaking up or dividing information received from an information source using filters that each respectively correspond to the type of information that was received (examples of parsers include stock quote parser, weather parser, lotto parser and mail parser)".

To address Defendants' assertions that the claims require "parsers" plural, SimpleAir has proposed modifying the *AWS* construction by adding to the beginning of the construction "using multiple computer software programs, routines or functions." The remaining disputes focus on whether "parsers" are limited to "filters" and whether the parsers correspond to the server or to the type of information.

1. Parties' Position

SimpleAir objects to Defendants' replacement of the term "parsers" with "filters." SimpleAir asserts that the ordinary meaning of "parsers" is not "filters." Dkt. 302 at 6-7. SimpleAir also asserts that the use of an example in the specification does not limit "parsers" to "filters." SimpleAir objects to Defendants' inclusion of the phrase "that each respectively

corresponds to the type of information that was received." SimpleAir asserts that Defendants' construction conflicts with the claim language that requires "parsers corresponding to said servers [central broadcast server]." Thus, SimpleAir asserts the correspondence of the parsers is to the servers, not to the type of information received. SimpleAir also asserts that Defendants' construction limits the term to a preferred embodiment in the specification ("stock quote parser, weather parser, lotto parser and mail parser"). SimpleAir asserts that the relevant passage in the specification that recites such embodiments explicitly states "the present invention is not limited to the information sources or parsers described herein." '433 8:10-11. SimpleAir further asserts that the prior Court's use of "into components whose content or format can be analyzed, processed or acted upon" more accurately reflects the ordinary meaning. Dkt. 302 at 9 (citing dictionary definitions).

As to the correspondence of the parser to the information, Defendants assert that the full quote at '433 8:10-14 states: "The present invention is not limited to the information sources or parsers described herein. Rather, any type of information source and corresponding parser may be used." Defendants assert that the "corresponding parser" language makes clear that parsers correspond to the type of information. Dkt. 329 at 22-23.

Defendants also assert that the intrinsic record teaches that parsers are "filters." Defendants quote '914 12:31-34: "the central broadcast server 34, which processes the incoming data packets by parsing the feeds 16 against specific filters, encoding the data and creating the desired broadcast feeds." Defendants also cite to a declaration in the reexamination which stated that "the '651 provisional's written description refers to parsers as 'filters'" and "filters that were used by the AirMedia commercial embodiment to parser." Dkt. 329 at 24, (quoting Ex. 1 at 5, 9)

2. Analysis

The citations in the specification describe parsing with filters, but the use of filters appears as an embodiment. Caution should be taken to merely limiting claims to a disclosed embodiment. *See Phillips*, 415 F.3d at 1323. However, Defendants have not pointed to language indicative that the specification as a whole limits all parsers to filters. Moreover, the specification explicitly states that "[t]he present invention is not limited to the information sources or parsers described herein." '433 at 8:10-12. Moreover, the prosecution history statement cited by Defendants does not stand for the proposition that "parsers" are limited to filters. Rather, the prosecution statement referenced by Defendants was in a declaration of prior invention. In that statement, the inventors were demonstrating prior reduction to practice of the claimed inventions. To show evidence of prior use of "parsers," the declaration points to the use of filters. '914 Reexamination, Declaration of Prior Inventorship at 5, 9. Though such prosecution history emphasizes that there is support for the concept of parsers in the priority document and that filters are parsers, the prosecution statement does not stand for the proposition that "parsers" are limited to "filters." *Phillips* guides courts to use caution with the prosecution history as the prosecution history often lacks clarity. *See Phillips*, 415 F.3d at 1317. Here, the prosecution history does not equate to a statement that parsers are limited to filters. When viewed in the entirety, the intrinsic evidence does not limit parsers to only filters.

As to the "corresponding" concept, *Phillips* notes that the claim analysis must start with the claims. '914 Claim 1 explicitly states "parsers corresponding to said central broadcast server" and '433 Claim 1 explicitly states "parsers correspond to said servers."[4] The specification makes clear that these parsers are within what is described as "a block diagram 100 of the software architecture for communications between the information sources and central

[4] The "servers" in '433 Claim 1 refers to the earlier recited "servers in said central broadcast server."

broadcast server 34." '433 Figure 1, 2, 7:57-59. These parsers are also clearly described as components of the central broadcast server 34. '433 7:43-8:14. Thus, the specification provides explicit support for the parsers corresponding to the central broadcast server / the servers. Though the specification includes an embodiment in which the parsers are matched to the information source (stock quote, weather, email, etc.), the claim language is explicitly not so limited. Instead, the claim language requires a correspondence to the central broadcast server / the servers. Having rejected the Defendants proposed modified "correspondence" language in favor of the explicitly recited correspondence, the Court finds that no further construction is needed for the "corresponding to said central broadcast server [to said servers]" limitation. Based on the rationale presented here and in the *AWS* Order, the Court maintains the general concepts of the construction from the *AWS* Order with the modification to reflect that the claim term references parsers (plural).

The Court construes "parsing said data with parsers" to mean **"using multiple computer software programs, routines, or functions to break or divide data received from an information source into components whose content or format can be analyzed, processed or acted upon."**

G. Gateway Terms

"gateway" ('433 Claim 1; '914 Claim 1)

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
no separate construction for "gateway" required.	hardware or software that connects two or more different networks

The primary dispute between the parties is whether a gateway must connect two or more different networks.

1. Parties' Position

SimpleAir asserts that the gateway is software and points to Figure 2 and the text which describe the "information gateway" 134 as part of the "software architecture" of Figure 2. Dkt. 302 at 13-14 (citing '433 Figure 2, 7:57-60). SimpleAir asserts that the claim requires the "information gateway" to "build data blocks and assign addresses to the data blocks" and that such functions cannot be done by hardware alone, software is required.

SimpleAir also asserts that the "information gateway" does not connect two or more different networks. SimpleAir asserts that the claim does not state this and that the preferred embodiment does not disclose this. SimpleAir asserts that the preferred embodiment as shown in Figure 2 depicts the information gateway as a component of the central broadcast server. SimpleAir asserts that the information gateway merely interfaces with components of the central broadcast server such as the content manager, content budget rules, subscriber database and the wireless gateway. Dkt. 302 at 14-15.

Defendants cite to several technical dictionaries to assert that "gateway" has a specific meaning in the art that corresponds to hardware or software that connects different networks. Dkt. 329 at 29. Defendants assert that this conforms to Figures 2 and 4 which illustrate the connection between the information gateway and the wireless gateway. Defendants assert that the gateways operate as connection points between the networks, also citing to Figures 12, 13 and 15. Defendants assert the specification describes the gateways as transforming the data in a manner which allows the data to transfer between different networks. Dkt. 329 at 28-29 (citing '914 11:32-41). Defendants assert that the information gateway is not a component of the central broadcast server but its own server, thus rebutting SimpleAir's argument that the gateways may all be in one server. Defendants point to the reexamination in which the patentee stated: "It is the second server…that serves as the 'information server'." Dkt. 329 at 29-30 (quoting '914

Reexamination Interview Agenda Dated 10/21/12 at 2). Defendants further assert that even if the gateways were in the same server, the information gateway still connects to the wireless gateway, thus connecting different networks.

As to the reexamination statement cited by Defendants, SimpleAir asserts that the patentees merely pointed out that the information gateway was supported in the provisional application because SimpleAir cited to one of the servers in the central broadcast server of Figure 1 as being an example information gateway. With regard to the dictionary definitions, SimpleAir cites to one of Defendants' dictionaries in which alternative definitions include a definition that describes connecting systems that may have the same communication protocol and a definition that describes machines and programs that provide address translation. Dkt. 329 Ex. 16 at 295-96 (IBM Dictionary of Computing).

2. Analysis

Though the parties debate the scope of the extrinsic evidence, the specification provides an understanding as to the use of the term in the patents-in-suit. Figure 2 and the associated description clearly include the information gateway 134 and wireless gateway 136 within what is described as "a block diagram 100 of the software architecture for communications between the information sources and central broadcast server 34." '433 Figure 2, 7:57-59. As noted in Figure 4, the information gateway "builds data block and assigns real and virtual capcodes to a data block as required based on information in the subscriber database" and the wireless gateway "performs packetization compression, encryption, etc. to prepare data block for transmission over the wireless broadcast network." '433 Figure 4; *See also* '433 Figure 15. Similarly, with regard to Figure 12, the information gateway 134 "attaches URL tag to the message." '433 Figure 4. These tasks are described in the context of being performed within the network of

servers 33 of the central broadcast server 34. '433 Figures 1 and 2, 7:43-9:14. Though the "wireless gateway 136" is described as preparing "data blocks for transmission over a wireless broadcast network," the communications between the information gateway and other portions of the software architecture 100 of Figure 2 and communications between the information gateway and wireless gateway are not described in the context of connecting two different networks. Rather, such connections are described in the context of software components of the central broadcast server. Thus, though Defendants point to extrinsic evidence for the proposition that "gateway" as known in the art may connect different networks, the intrinsic record demonstrates that within the patents, the term "gateway" is used in a broader context that includes connections between different software components. A construction which excludes a disclosed embodiment is rarely proper. *SanDisk Corp. v. Memorex Products, Inc.*, 415 F.3d 1278, 1285 (Fed. Cir. 2005). As such, the term "gateway" should not be so limited. It is noted that though the *AWS* Order did not construe "gateway" as a separate construction, the findings herein are consistent with the *AWS* Order which described a "transmission gateway" in the context of software. Consistent with the discussion herein, the term "gateway" shall be construed within the context of the larger "information gateway" and "transmission gateway" terms below.

"an information gateway for building data blocks and assigning addresses to said data blocks" ('433 Claim 1; '914 Claim 1)

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
one or more software programs (or a portion of a program) that build data blocks and assign addresses to the data blocks	gateway that builds data blocks and determines addresses for the data blocks based on the type of information in the data blocks

Having resolved the underlying meaning of "gateway," the primary disputes left between the parties are whether information gateway "assigns" or "determines" addresses and whether the information gateway's actions are based upon the type of information of the data blocks.

1. Parties' Position

SimpleAir asserts that Defendants change the claimed "assigning" to "determining." SimpleAir asserts that the words have a different meaning and that the words were not used interchangeably in the specification. SimpleAir asserts that "determining" was used elsewhere in the specification for determining how data is handled, indicating that when the patentees wanted to use "determine," they did so. Dkt. 302 at 15. SimpleAir also asserts that Defendants' inclusion of "based on the type of information in the data blocks" is contrary to the claim language which just calls out building and assigning, not what the building and assigning must be based on. Dkt. 302 at 15-16. Further, SimpleAir asserts that Defendants' construction does not match the embodiment in the specification because the citations Defendants provide teach that the addresses are assigned based on information in a subscriber database. Dkt. 359 at 13.

Defendants assert that its construction explains what is actually done. Defendants assert that its construction reflects what the specification teaches: (1) that the information gateway determines address ('914 22:27-31); (2) based on the type of information in the data block ('914 11:32-36); (3) assigns the addresses based on the information in the database ('914 22:27-31) and (4) builds the data blocks based on the information ('914 22:27-31). Defendants assert that without first determining the addresses, there is nothing to assign and that the determination must be based on something. Dkt. 329 at 30. Defendants assert that their construction thus explains to the jury what the phrase means.

2. Analysis

Phillips counsels the importance of the actual claim language as a starting point for the claim construction analysis. Here, the claim term in question is "assigns." There appears to be no dispute that "assigns" and "determines" have non-identical meanings. Defendants are correct

that the specification in one passage states "data blocks are built in the information gateway 134 and all applicable real and virtual addresses are determined based on the type of information in the data block and user subscription data from the subscriber database 130." '433 21:67-22:4. However, the specification also notes that the information gateway "assigns real and virtual capcodes" and "attaches URL tags." '433 Figure 4 and Figure 12. In this context, the information gateway is described as processing address information in a manner other than just "determining." Moreover, the claim language in question is "assigns." Defendants have acknowledged that "determining" is another step in the process separate from assigning. Dkt 329 at 30. The method claims in question do not include this separate determining step.

Defendants have not pointed to any disavowal in the specification mandating that the information gateway determine addresses in addition to the claimed "assigning." That the specification may describe additional steps in the disclosed embodiment does not mandate adding additional steps to the claimed steps.

Similarly, Defendants have not pointed to any disavowal in the specification mandating that the information gateway determine addresses based on the type of information in the data block. Moreover, even the disclosed embodiment in the specification describes the determination of addresses including a basis in addition to the type of information. In particular, the specification describes an embodiment in which "the information gateway 134 (step 115) which resolves its logical destination address to a physical wireless address based on information in the subscriber database (step 117)." '433 11:20-23; *See* '433 22:1-4. With that frame of reference, dependent claim 2 recites "building data blocks and assigning addresses to said data block based on information in a subscriber database." Defendants' construction would exclude

such embodiments. In the context of the specification, the claim language itself most accurately describes the term in dispute.

The Court construes "an information gateway for building data blocks and assigning addresses to said data blocks" to mean **"one or more software programs (or a portion of a program) that build data blocks and assign addresses to the data blocks."**

"a transmission gateway for preparing said data blocks for transmission to receivers"

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
one or more software programs (or a portion of a program) that prepare the data blocks for their transmission to receivers and interface with other resources used to transmit the preprocessed data	Indefinite Alternatively: a gateway that performs compressing, encrypting, packetizing, and forward error correction on the data blocks.

The parties dispute whether this term is definite and, in the alternative, whether the "transmission gateway" should include the particular functions of the disclosed wireless gateway 136.

1. Parties' Position

SimpleAir asserts that inclusion of "software" was proper in the prior *ASW* construction because a type of transmission gateway (the wireless gateway 136) is part of the "software architecture" of Figure 2. '433 Figure 2, 7:57-60. SimpleAir further asserts that the actual words of the claim describe what the transmission gateway is used for: "preparing said data blocks for transmission to receivers." SimpleAir asserts this language is unambiguous and needs no further construction.

SimpleAir asserts that indefiniteness is not shown merely by stating the term is not used in the specification. Rather, SimpleAir asserts that Defendants must "demonstrate by clear and convincing evidence that one of ordinary skill in the relevant art could not discern the boundaries

of the claim." Dkt. 359 at 13 (quoting *Haemonetics Corp. v. Baxter*, 607 F.3d 776, 783 (Fed. Cir. 2010). SimpleAir asserts that Defendants' alternative construction seeks to import the preferred embodiment functions of the wireless gateway (packetizing, compressing, encrypting and error correction). Dkt. 302 at 18. SimpleAir asserts that the claim merely requires preparing blocks for transmission and that the claim should be entitled to its full scope, not limited to the preferred embodiment.

Defendants assert that "transmission gateway" is never used in the specification, which at most refers to "wireless gateway." Defendants assert that unless one construes transmission gateway to be the specific wireless gateway embodiment, there is no disclosure as to the term so the term is indefinite. Defendants assert that the dispute as to including the wireless gateway specific functions was not considered in *AWS*. Defendants assert that the packetizing, compressing, encrypting, and error correction steps are the only steps disclosed in the specification for preparing blocks for transmission. Dkt. 329 at 32 (citing '914 9:63-10:2, 11:36-40, Figs. 4, 15). Defendants assert that the SimpleAir construction merely parrots the claim language and provides no help to the jury.

2. Analysis

"Only claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1250 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton*, 514 F.3d at 1249-50. SimpleAir has proposed a construction

for a term that the *AWS* Court and even *AWS* Defendants found sufficiently definite to construe. Moreover, in light of the specification, it is clear that the wireless gateway is an embodiment of a transmission gateway that prepares data blocks for transmission to receivers. '433 Figures 2, 4, and 15 and associated text. Defendants seek to incorporate the particular details as to how the gateway prepares data for transmission. However, Defendants have not pointed to language of disavowal or other importance of the particular mechanisms of the preparation. The claim language merely recites preparing the data blocks for transmission, not particular specific ways for preparation. For these reasons and the rational presented in the *AWS* Order at 24-26, the Court adopts the *AWS* construction.

The Court construes "a transmission gateway for preparing said data blocks for transmission to receivers" to mean **"one or more software programs (or a portion of a program) that prepare the data blocks for their transmission to receivers and interface with other resources used to transmit the preprocessed data."**

H. "central broadcast server" ('433 Claim 1; '914 Claim 1)

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
one or more servers that are configured to receive data from a plurality of information sources and process the data prior to its transmission to one or more selected remote computing devices	one or more servers that receive data transmitted by a plurality of information sources and process the data prior to its transmission to one or more selected remote computing device

The parties' dispute whether the server must be configured to receive data or must actually receive data.[5] Defendants also assert that "transmitted by a plurality of information sources" more closely tracks the claim language.

[5] At the claim construction hearing, the parties announced agreement as to the term "server" to mean "one or more pieces of computer equipment and the software running on the equipment used to provide services for one or more other computers or computing devices."

1. Parties' Position

SimpleAir asserts that its construction matches the *AWS* Order and that Defendants are changing, without justification, the "are configured to receive data from a plurality of information sources" language of the prior construction to "receive data transmitted by a plurality of information sources."

Defendants assert that the issue in dispute was not raised to the *AWS* Court since, in *AWS*, the parties focused on the meaning of "central." Defendants assert that the server must actually receive data from the information sources. Defendants assert that SimpleAir's construction reads out of the claims the requirement that the server receive information and only requires a server to be "configured to" do so. Dkt. 329 at 34-35. Defendants assert this issue is similar to SimpleAir's attempt to limit "content manager" to software that "can" determine how data is handles instead of "actually determine." Dkt. 329 at 35 (citing *AWS* Order at 23, n.5). Defendants assert the specification discloses a server that actually receives data from multiple sources, not just one that is "configured" to do so. Defendants assert the specification does not teach simply "configuring" the servers. Dkt. 329 at 35.

2. Analysis

The disputed term is "central broadcast server." The claim term is found in the claimed step of "transmitting data from an information source to a central broadcast server." Thus, the surrounding claim limitations describe what is necessary as to the transmission of data: "transmitting data from an information source to a central broadcast server." Defendants' construction of the server structure provides needless redundancy as to the other claim language. Transmitting data is a limitation of the claimed step itself.

The Court construes "central broadcast server" to mean **"one or more servers that are configured to receive data a plurality of information sources and process the data prior to its transmission to one or more selected remote computing device."**

I. "a content manager for determining how said data is handled" ('433 Claim 1)

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
one or more software programs (or a portion of a program) that determine how different types of information received from an information source are handled or processed	Term is governed by 35 USC § 112 ¶ 6. *function*: determining how said data is handled: *corresponding structure*: one or more servers programmed to determine priorities for different types of information, decide which pieces of information will be transmitted and which will be rejected, apply scheduling rules, determine what format the information should be sent in, determine what compression method to use, and determine who should receive the information.

The parties' dispute focuses on whether the term is a means plus function term or not.

1. Parties' Positions

SimpleAir asserts the context of the claim language demonstrates that "content manager" is software as it must be something that can make "determinations." SimpleAir also cites to the Figure 2 "software architecture" which includes the content manager. '433 Fig. 2, 7:57-60. SimpleAir quotes the passage "the content manager 114 determines how different types of information are handled." '433 8:26-27.

SimpleAir asserts that the term is not a means plus function term because the absence of the word "means" creates a strong presumption against the term being construed as means plus function "that is not readily overcome." Dkt. 302 at 10 (citing *Flo Healthcare Solutions, LLC v.*

Kappos, 697 F.3d 1367, 1373-4 (Fed. Cir. 2012)). SimpleAir asserts that to overcome the presumption, the element must be devoid of anything that can be construed as structure. *Id.* SimpleAir asserts that the *AWS* Court recognized that "content manager" was structure within the central broadcast server, namely one or more software programs. *AWS* Order at 23-24. SimpleAir asserts that the standard is not whether a term is generally understood in the art, but rather, whether the term "essentially is devoid of anything that can be construed as structure." Dkt. 359 at 12 (quoting *Flo Healthcare*, 697 F.3d at 1374). SimpleAir also cites to three Eastern District of Texas cases that have found "software" recites sufficiently definite structure to avoid application of §112.[6] SimpleAir asserts that the specification merely provides a preferred embodiment that lists out seven determinations made by the content manager. '433 8:27-47. SimpleAir asserts that Defendants' construction imports six of these determinations. SimpleAir asserts it is incorrect to limit the claims to specific embodiments. Further, SimpleAir asserts that even if the claim term were a means plus function limitation, it is improper to import functional limitations that are not recited in the claim. Dkt. 302 at 12 (citing *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001). SimpleAir asserts that the structure that Defendants seek to add is only necessary to perform the various un-claimed functions that the preferred embodiment discloses.

Defendants assert that it is black letter law that the term "means" is not required for a limitation to be a means plus function limitation. Dkt. 329 at 36 (citing *MIT v. Abacus Software*, 462 F.3d 1344, 1353 (Fed. Cir. 2006)). Defendants assert that the presumption is overcome because "content manager" has no generally understood structure. Defendants point to the reexamination proceeding in which the patentee stated that "content manager" was a "coined"

[6] *Aloft Media, LLC v. Adobe Sys.*, 570 F.Supp. 2d 887, 898 (E.D. Tex. 2008); *JuxtaComm-Texas Software v. Axway, Inc.*, 2011 U.S. Dist. LEXIS 1415156 (E.D. Tex. Dec. 7, 2011); *Corelogic Info. Solutions, Inc. v. Fiserv. Inc.*, 2012 U.S. Dist. LEXIS 135386, 24-25 (E.D. Tex. 2012).

term. Dkt. 329 at 36 (citing Ex. 18 at 8). Defendants assert that a term without a generally meaning should be construed as a means plus function term. Defendants assert that "software" is a generic term without sufficient structure necessary to avoid a means plus function construction, similar to terms such as "mechanism," "element" and "device" which "typically do not connote sufficiently definite structure." Dkt. 329 at 37 (quoting *MIT*, 462 F.3d at 1354).

Defendants further assert that when the means plus function element is a computer or software running a computer, the element is limited to the algorithms disclosed in the specification for performing the function. Dkt. 329 at 37 (citing *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). Defendants assert that the specification discloses "one or more servers" as performing the function for determining how data is handled: "the content manager 114 located in the central broadcast server 34". '433 8:4-5. Defendants then cite the passage:

> The content manager 114 determines how different types of information are handled. In particular, it [1] specifies priorities for different types of information, and [2] decides which pieces of information will be transmitted and which will be rejected. It also [3] applies scheduling rules 132 to determine when messages should be scheduled to be transmitted to the user. In addition, the content manager 114 is responsible for [4] determining what format the information should be sent in, what [5] compression method to use, and [6] who information should be sent to.

'433 8:26-35 (bracketed numbering added). Defendants assert that the corresponding structure must include the algorithm steps as reflected in Defendants' construction. Defendants assert that construing the term as a means plus function term is the only way to provide necessary structure for "content manager."[7]

[7] At the oral argument Defendants cited to *Functional Media L.L.C. v. Google Inc*., 708 F.3d 1310, 1321–22 (Fed. Cir. 2013) for the proposition that software cannot be sufficient structure. However, *Functional Media* was a case in which "means" language was utilized and a case in which (in contrast to the disclosure at '433 8:26-35) there was no explanation of the functions the software performed.

2. Analysis

The *AWS* Court did not consider whether the "content manager" was a means plus function term as none of the parties advocated such a construction. The claim language, which does not use the term "means," creates a presumption that the limitation is not a means plus function term. *Flo Healthcare*, 697 F.3d at 1373-74. Moreover, as described in the specification, the content manager is part of the "software architecture" for communications. '433 Figure 2, 7:57-60. Further the content manager is "located in the central broadcast server 34." '433 8:4-5. The specification describes the content manager as "the content manager 114 determines how different types of information are handled" ('433 8:26-27) and then describes a number of particular ways the content manager handles the information ('433 8:27-47). Such disclosures are consistent with an interpretation that the content manager is software. Thus, in light of the specification, it is clear that the content manager is software. Here, the recitation of software with a description of the software's operation provides sufficient structural meaning such that the means plus function requirements of §112 ¶ 6 do not apply. *Aloft Media, LLC v. Adobe Sys.*, 570 F.Supp. 2d 887, 898 (E.D. Tex. 2008). The term cannot be stated to be devoid of structure and Defendants have not overcome their burden. The rationale of the *AWS* Order still applies even in view of Defendants new arguments.

The Court construes "content manager" as **"one or more software programs (or a portion of a program) that determine how different types of information received from an information source are handled or processed."**

J. "contextual graphics" and "predefined format" ('433 Claim 69; '914 Claim 69)

"contextual graphics"

Plaintiff's Proposed Construction	**Defendant's Proposed Construction**
graphics relating to the context of the	Indefinite

preprocessed data that has been received.	

"predefined format"

Plaintiff's Proposed Construction	**Defendant's Proposed Construction**
No construction necessary.	Indefinite

1. Parties' Positions

Defendants assert that the terms are indefinite. Defendants assert that "contextual graphics" is not used anywhere in the specification. Defendants assert that "contextual graphics" implies that some graphics are "contextual" and some are not, yet the specification does not provide guidance as to how to make such a distinction. Dkt. 329 at 33. Defendants assert that SimpleAir's construction of "relating to" does not cure the deficiencies in "contextual graphics."

As to "predefined format," Defendants assert that the term is also not used in the specification and there is no frame of reference for what is meant by "predefined." Defendants assert that it is unclear whether the format needs to be defined in the sense of a file format (JPEG, GIF, BMP, etc.) or merely defined prior to some known event. Thus, Defendants assert that it is unclear as to whether predefined format refers to the file type or some pre-arrangement established by the programmer or user. Defendants assert the term is indefinite because the bounds of the term cannot be discerned. Dkt. 329 at 33-34.

SimpleAir contends that Defendants submitted no evidence to support their position and merely made attorney argument. SimpleAir asserts the surrounding claim language provides meaning to the terms. SimpleAir asserts that in claim 69, contextual graphics relate to the context of the data that has been received, and "predefined format" refers to a previously defined format in which the data will be displayed. SimpleAir asserts that claim 70 provides an example

in which the "predefined format is a scoreboard" and in this case the "contextual graphics" would relate to a sports game. Dkt. 359 at 14.

2. Analysis

"Only claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1250 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton*, 514 F.3d at 1249-50.

SimpleAir has provided a reasonable interpretation of the claim such that the claim is amenable to a non-ambiguous construction. As to "contextual graphics," graphics which provide context to the information are shown. For example, the "football viewer" of Figure 24(b) provides a graphical football context and the "newspaper viewer" of Figure 24(c) provides a graphical newspaper context. Similarly, the various viewers of Figures 24(a)-24(d) provide the graphics in a predefined format. In light of the specification examples, the term "predefined format" requires no further construction as the formats displayed are merely displayed in a predefined manner. The specification is in conformance with claim 69 of each patent and claim 70 which depends from 69 (claim 70 of each patent describes the predefined format as "a scoreboard"). In light of the specification and claims, the terms are not insolubly ambiguous.

The Court construes "contextual graphics" to be **"graphics relating to the context of the preprocessed data that has been received."** The Court finds that "predefined format" needs no further construction.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:11-CV-416-JRG
	§	
MICROSOFT CORPORATION, et al.,	§	**LEAD CASE**
	§	
Defendants.	§	
	§	
SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:13-CV-587-JRG
	§	
GOOGLE INC., et al.,	§	
	§	
Defendants.	§	
	§	

PRETRIAL ORDER

The Court held pretrial hearings on December 13, 2013 and January 7, 2014 and heard argument on Plaintiff's Motion to Exclude Opinions and Testimony of David Eastburn (Dkt. No. 473), Google's Motion to Exclude Testimony of Robert Mills (Dkt. No. 474), Google's Motion to Exclude Testimony of Dr. V. Seenu Srinivasan (Dkt. No. 475), Plaintiff's Motion to Exclude Opinions and Testimony of Dr. Keith R. Ugone (Dkt. No. 476), Plaintiff's Motion to Exclude Opinions and Testimony of Dr. Tim Williams (Dkt. No. 498), Defendant's Motion to Strike Supplement Expert Reports (Dkt. No. 515), SimpleAir's Motion re Scheduling of Dr. V. Seenu Srinivasan (Dkt. No. 494), Defendants' Motion for Summary Judgment of Lack of Priority and

Invalidity (Dkt. No. 470), Google and Motorola Mobility's Motion for Summary Judgment of Non-Infringement (Dkt. No. 471), Google and Motorola Mobility's Partial Motion for Summary Judgment of Non-Infringement Based on the Facebook License Agreement (Dkt. No. 472) and Simple's Cross-Motion for Motion for Summary Judgment of No License (Dkt. No. 487), Google and Motorola Mobility's Motion for Leave to File a Letter Brief Requesting Permission to File a Motion for Summary Judgment of Non-Infringement (Dkt. No. 499), Plaintiff's Motions *in Limine* (Dkt. No. 503), Defendants' Motions *in Limine* (Dkt. No. 501), Plaintiff's Motion to Strike New Non-infringement Report from Dr. Tim Williams (Dkt. No. 556), Defendants' Cross-Motion to Strike New Infringement Expert Report From Dr. James Knox (Dkt. No. 569), Defendants' Motion for Order Permitting Deposition (Dkt. No. 567), and the parties' January 5, 2014 Updated Joint Notice of Outstanding Exhibits (Dkt. No. 566).

The Court announced its rulings and reasoning into the record. Any clarification and/or modification to such motions, as stated by the Court during such hearing, fully applies to the rulings as stated below, and the ruling set forth herein do not exclude or supplant any clarification, reasoning, and/or modification as stated in the record.

I. *Daubert* Motions and Motions for Summary Judgment

Plaintiff's Motion to Exclude Opinions and Testimony of David Eastburn (Dkt. No. 473) is **GRANTED-IN-PART** to the extent comparisons are made between prior art and SimpleAir's infringement contentions; otherwise **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Google's Motion to Exclude Testimony of Robert Mills (Dkt. No. 474) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Google's Motion to Exclude Testimony of Dr. V. Seenu Srinivasan (Dkt. No. 475) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion to Exclude Opinions and Testimony of Dr. Keith R. Ugone (Dkt. No. 476) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion to Exclude Opinions and Testimony of Dr. Tim Williams (Dkt. No. 498) is **GRANTED-IN-PART** to exclude any opinion that the "receivers" and "device" must be separate and cannot be components within a single smartphone as contrary to the Court's claim construction of the phrase "receivers communicating with remote computing devices." This motion is also **GRANTED-IN-PART** to exclude any opinion that a "data channel" cannot include the path between the remote computing device and the attached receiver because that line of argument was expressly rejected in the Court's *Markman* Order. The remainder of this motion is otherwise **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendant's Motion to Strike Supplement Expert Reports (Dkt. No. 515) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

SimpleAir's Motion re Scheduling of Dr. V. Seenu Srinivasan (Dkt. No. 494) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion for Summary Judgment of Lack of Priority and Invalidity (Dkt. No. 470) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Google and Motorola Mobility's Motion for Summary Judgment of Non-Infringement (Dkt. No. 471) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Google and Motorola Mobility's Partial Motion for Summary Judgment of Non-Infringement Based on the Facebook License Agreement (Dkt. No. 472) is **DENIED** and

Simple's Cross-Motion for Motion for Summary Judgment of No License (Dkt. No. 487) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Google and Motorola Mobility's Motion for Leave to File a Letter Brief Requesting Permission to File a Motion for Summary Judgment of Non-Infringement (Dkt. No. 499) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion to Strike New Non-infringement Report from Dr. Tim Williams (Dkt. No. 556) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Cross-Motion to Strike New Infringement Expert Report from Dr. James Knox (Dkt. No. 565) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion for Order Permitting Deposition (Dkt. No. 567) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

II. Plaintiff's Motions *in Limine* (Dkt. No. 503) and Defendants' Motions *in Limine* (Dkt. No. 501).

The Court reminds the parties that its ruling on a motion *in limine* is not a definitive ruling on the admissibility of evidence. An order granting a motion *in limine* is an order requiring the offering party to approach the bench and seek leave from the Court prior to mentioning the matter covered by the order to the jury or the jury panel during *voir dire*. Similarly, an order denying a motion *in limine* does not relieve a party from making an objection at trial.

Plaintiff's Motion *in Limine* No. 1 (No arguments or expert opinions that contradict the Court's *Markman* rulings) is **DENIED-AS-MOOT** based on the Court's instructions.

Plaintiff's Motion *in Limine* No. 2 (No undisclosed expert opinions) is **DENIED-AS-MOOT** based on the Court's instructions.

Plaintiff's Motion *in Limine* No. 3 (No undisclosed evidence or argument of invalidity,

non-infringement, or non-infringing alternatives) is **DENIED-AS-MOOT** based on the Court's instructions.

Plaintiff's Motion *in Limine* No. 4 (No evidence or argument by Google or its experts comparing the prior art to SimpleAir's infringement theories rather than the Court's constructions) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 5 (No evidence or argument by Google or its experts comparing the preferred embodiments or the commercial embodiment to the accused instrumentalities) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 6 (No evidence or argument by Google that its accused instrumentalities practice the claims of any of Google's own patents or patents of third parties) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 7 has been **WITHDRAWN**.

Plaintiff's Motion *in Limine* No. 8 (No evidence or argument on late-disclosed non-infringement theories) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 9 (No testimony from non-experts as to meaning of claim terms) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 10 (No argument or evidence about whether Payne and von Kaenel offered a stake in SimpleAir to others, such as Rose, Katz, or Starr) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion *in Limine* No. 1 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Relating to Unasserted U.S. Patent Nos. 8,572,279, 6,167,426, and 6,735,614) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion *in Limine* No. 2 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Asserting that the Reexamination of Asserted U.S. Patent 7,035,914 Strengthens the Presumption of Validity of the Patent) is **GRANTED** as agreed.

Defendants' Motion *in Limine* No. 3 has been **WITHDRAWN**.

Defendants' Motion *in Limine* No. 4 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Regarding Plaintiff's Settlement Negotiations with Apple and RIM) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion *in Limine* No. 5 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Regarding Any Expert Opinion Not Disclosed in Plaintiff's Experts' Reports) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion *in Limine* No. 6 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Regarding Any Infringement Positions or Theories Not Disclosed in Plaintiff's Infringement Expert's Report) is **GRANTED** as agreed.

Defendants' Motion *in Limine* No. 7 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Regarding Google's Total Sales Data, Total Revenues, Size or Financial Worth) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendants' Motion *in Limine* No. 8 has been **WITHDRAWN**.

Defendants' Motion *in Limine* No. 9 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Regarding the Court's Claim Construction Order Other Than the Actual Claim Constructions Themselves) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record. The parties may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties should refrain from

mentioning any portion of the opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

Defendants' Motion *in Limine* No. 10 has been **WITHDRAWN**.

Defendants' Motion *in Limine* No. 11 has been **WITHDRAWN**.

Defendants' Motion *in Limine* No. 12 (Plaintiff Should Be Precluded From Offering Testimony, Evidence, or Argument Regarding the Issuance of an Injunction) is **GRANTED** as agreed.

III. January 5, 2014 Updated Joint Notice of Outstanding Exhibits (Dkt. No. 566)

On January 7, 2014 the Court heard argument on the disputed exhibits listed in the parties' January 5, 2014 Updated Joint Notice of Outstanding Exhibits (Dkt. No. 566) and announced its rulings and reasoning in the record. Any disputed exhibit for which the Court has overruled the opposing party's objection is deemed pre-admitted. Any exhibit on each side's exhibit list not specifically objected to or withdrawn at the January 7, 2014 hearing and otherwise contained within the parties' January 5, 2014 Updated Joint Notice of Outstanding Exhibits is also deemed pre-admitted. As the Court informed the parties at the pretrial hearing, a pre-admitted exhibit will not become part of the record in this case unless it is introduced, published, or otherwise used before the jury at trial. Further, objections not made during the pre-admission process are considered waived and may not be raised during trial. Objections overruled during the pre-admission process are preserved for appeal without being re-urged during the case in chief in the event the underlying exhibit is utilized at trial.

IV. Trial Procedure

Jury Selection is scheduled for 9:00 am on January 13, 2014. The parties each have 30 minutes per side for *voir dire*, and up to 3 minutes of such *voir dire* time may be used for general high-level background or case introduction purposes. The parties are expressly instructed to refrain from argument during *voir dire*.

Trial is scheduled to begin immediate following jury selection. As the Court has previously instructed, the parties will have 12 hours per side to present their evidence, not including opening and closing statements. The parties each have 30 minutes per side for opening statements and 30 minutes per side for closing statements. Court will use its best efforts to be in chambers and available by 7:30 am each day before the start of evidence to take up any housekeeping matters or late-arriving disputes that might come up during trial. Any deposition clip objections must be brought to the Court's attention on a rolling basis during the morning hour on the day *before* such clip is expected to be played at trial. In addition, pre-admitted exhibits used before the jury each day will be identified and their exhibit numbers read into the record the next morning before the jury is brought into the Courtroom.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:11-CV-416-JRG
	§	
MICROSOFT CORPORATION, et al.,	§	**LEAD CASE**
	§	
Defendants.	§	
	§	
SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:13-CV-587-JRG
	§	
GOOGLE INC., et al.,	§	
	§	
Defendants.	§	
	§	

JUDGMENT AS TO INFRINGEMENT AND VALIDITY

A jury trial commenced in this case on January 13, 2014, and the jury reached and returned its verdict on January 18, 2014 (Dkt. No. 601). The jury reached a verdict unanimously finding infringement and no invalidity, but the jury deadlocked on the amount of damages. Pursuant to Rule 58 of the Federal Rules of Civil Procedure and in accordance with the jury's verdict and the entirety of the record available to the Court, the Court hereby **ORDERS AND ENTERS JUDGMENT AS TO INFRINGEMENT AND VALIDITY** as follows:

1. Defendant Google Inc. infringes claims 1, 2, 3, 7, and 22 of U.S. Patent No.

7,035,914 ("the '914 patent").

2. Claims 1, 2, 3, 7, and 22 of the '914 patent are not invalid.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	LEAD: CASE NO. 2:11-CV-416-JRG
v.	§	CASE NO. 2:13-CV-587-JRG
	§	
GOOGLE INC., et al.,	§	
	§	
Defendants.	§	
	§	

PRETRIAL ORDER

The Court held a pretrial hearing on March 7, 2014 and heard argument on Defendant Google Inc.'s ("Google" or "Defendant") Motion for Continuance (Dkt. No. 648), Google's Motion to Stay Damages Trial Pending Appeal (Dkt. No. 650), Google's Renewed Motion to Exclude Testimony of Dr. V. Seenu Srinivasan (Dkt. No. 655), Google's Renewed Motion to Exclude Testimony of Mr. Robert Mills (Dkt. No. 656), Google's Motion to Present Tetimony of Mr. David Eastburn by Trial Deposition (Dkt. No. 669), Plaintiff's Motions *in Limine* (Dkt. No. 658), Defendant's Motions *in Limine* (Dkt. No. 657), and the evidentiary disputes set out in the parties' March 3, 2014 Joint Notice of Outstanding Disputes (Dkt. No. 667).

The Court announced its rulings and reasoning into the record. Any clarification or modification to such motions, as stated by the Court during such hearing, fully applies to the rulings as memorialized herein, and the rulings set forth as follows do not exclude or supplant any clarification, reasoning, or modification as stated in the record.

I. Google's Motion for Continuance (Dkt. No. 648) and Motion to Stay pending Appeal (Dkt. No. 650).

Google's Motion to for Continuance (Dkt. No. 648) is **GRANTED-IN-PART** to the extent that Google is allowed to substitute previously identified fact witnesses for witnesses that are unavailable for trial; it is further **ORDERED** that Google must produce any substitute witness who has not yet been deposed for a deposition, at a time and place to be agreed upon between the parties, on or before March 14, 2014. In all other respects, Google's Motion for Continuance (Dkt. No. 648) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

Google's Motion to Stay pending Appeal (Dkt. No. 650) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

II. Google's Motion to Present Testimony of David Eastburn by Trial Deposition (Dkt. No. 669).

Plaintiff's Motion to Take Deposition from David Eastburn (Dkt. No. 669) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record; Mr. Eastburn's testimony is excluded in its entirety.

III. Google's Renewed Motion to Exclude Testimony of Dr. V. Seenu Srinivasan (Dkt. No. 655).

Google's Renewed Motion to Exclude Testimony of Dr. V. Seenu Srinivasan (Dkt. No. 655) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

IV. Google's Renewed Motion to Exclude Testimony of Robert Mills (Dkt. No. 656).

Google's Renewed Motion to Exclude Testimony of Dr. Robert Mills (Dkt. No. 656) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record.

V. Plaintiff's Motions *in Limine* (Dkt. No. 658).

The Court reminds the parties that its ruling on a motion *in limine* is not a definitive ruling on the admissibility of evidence. An order granting a motion *in limine* is an order requiring the offering party to approach the bench and seek leave from the Court prior to mentioning the matter covered by the order to the jury or the jury panel during *voir dire*. Similarly, an order denying a motion *in limine* does not relieve a party from making an objection at trial.

Plaintiff's Motion *in Limine* No. 1 (No argument or evidence about lack of pre-filing notice or willfulness) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 2 (No argument or evidence about SimpleAir's other lawsuits against Google or the Android OEMs) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 3 (No arguments or evidence of non-infringement or invalidity) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 4 (No argument or evidence about differences or comparisons between the preferred embodiment or commercial embodiment and the Google services) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 5 (No argument or evidence about Google's patent exhaustion and license defenses) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 6 (No argument or evidence about attorneys' fees to Dovel & Luner or contingency fee arrangements) is **GRANTED** as agreed.

Plaintiff's Motion *in Limine* No. 7 (No argument or evidence about Versus being a foreign company) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 8 (No evidence or argument by Google that its accused instrumentalities practice the claims of any of Google's own patents or patents of third parties) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 9 (No argument or evidence about whether Payne and Von Kaenel offered a stake in SimpleAir to others, such as Rose, Katz or Starr) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Plaintiff's Motion *in Limine* No. 10 (No argument or evidence about valuations of the patents during AirMedia bankruptcies or other numbers disclosed in any of the bankruptcies that purport to value the patents) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record. The credit sale regarding the intellectual property at issue here, as sold to a creditor or third party in bankruptcy is not covered hereby.

Plaintiff's Motion *in Limine* No. 11 (No argument or evidence about the founding or irrelevant achievements of Google) is **DENIED**, pursuant to the Court's reasoning as fully set forth in the record. However, such evidence shall be limited to a modest background introduction of Google to the jury or jury panel.

Plaintiff's Motion *in Limine* No. 12 (Dkt. No. 683) (Exclude untimely disclosed non-infringing alternative) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record. Defendant is hereby granted leave to submit a proffer of no more than three pages in length setting forth its argument with respect to the admissibility of the relevant evidence by no

later than 12:00pm on Friday, March 14, 2014. Plaintiff is granted leave to file a responsive proffer of no more than three pages, by no later than 5:00pm on Friday, March 14, 2014. The above ruling *in limine* will remain in force, unless and until such submission results in an express ruling from the Court which alters the above.

VI. Defendant's Renewed and New Motions *in Limine* (Dkt. No. 657).

Defendant's Renewed Motion *in Limine* No. 1 (Plaintiff should be precluded from offering testimony, evidence, or argument relating to unasserted U.S. Patent No. 8,572,279) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record. The Court's ruling is subject to the clarification, also announced on the record, regarding introduction of the '279 patent into evidence and reference to infringement allegations concerning the same.

Defendant's Renewed Motion *in Limine* No. 4 (Plaintiff should be precluded from offering testimony, evidence, or argument regarding plaintiff's settlement negotiations with Apple and RIM) is **GRANTED-IN-PART,** pursuant to the Court's reasoning as fully set forth in the record. Any material that was not disclosed during discovery in this matter may not be entered into evidence and may not be the subject of testimony. In all other respects, Defendants Renewed Motion *in Limine* No. 4 is **DENIED**.

Defendant's Renewed Motion *in Limine* No. 7 (Plaintiff should be precluded from offering testimony, evidence, or argument regarding Google's total sales data, total revenues, size or financial worth) is **DENIED** with respect to evidence, testimony or argument regarding the Android systems or systems related to the GCM or C2DM systems. In all other respects, Defendant's Renewed Motion *in Limine* No. 7 is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendant's Renewed Motion *in Limine* No. 11 (Plaintiff should be precluded from offering testimony, evidence, or argument regarding any defendant not present at trial, including publishing the case caption (unless revised to show Google as the sole defendant) to the jury) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendant's Renewed Motion *in Limine* No. 12 (Plaintiff should be precluded from offering testimony, evidence, or argument regarding the issuance of an injunction) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendant's New Motion *in Limine* No. 13 (Plaintiff should be precluded from offering testimony, evidence, or argument purporting that Google does not respect patents) is **GRANTED** as agreed.

Defendant's New Motion *in Limine* No. 14 (Plaintiff should be precluded from offering testimony, evidence, or argument regarding infringement by foreign servers or foreign use of Google accused services) is **DENIED,** pursuant to the Court's reasoning as fully set forth in the record.

Defendant's New Motion *in Limine* No. 15 (The parties should be precluded from asking any questions during *voir dire* seeking to commit jurors to any particular range or amount for damages) is **GRANTED,** pursuant to the Court's reasoning as fully set forth in the record.

Defendant's New Motion *in Limine* No. 16 (Plaintiff should be precluded from offering testimony, evidence, or argument regarding the absence of any Google witnesses at trial) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record.

Defendant's New Motion *in Limine* No. 17 Plaintiff should be precluded from offering testimony, evidence, or argument regarding the impact of the partial jury verdict of validity and

infringement on its claim for damages) is **GRANTED**, pursuant to the Court's reasoning as fully set forth in the record. The Court cautions the parties that they may refer to the fact that a previous jury found that the asserted patent was not invalid and that Defendant was **liable** for infringement. The parties are cautioned that the term "**guilty**" may not be used in reference to Defendant's liability or the jury verdict previously entered in this matter.

VII. Joint Notice of Outstanding Disputes (Dkt. No. 667)

On March 7, 2014 the Court heard argument on the disputed exhibits listed in the parties' March 3, 2014 Joint Notice of Outstanding Disputes (Dkt. No. 667), including outstanding disputes regarding exhibits. The Court announced its rulings and reasoning in the record. Any disputed exhibit for which the Court has overruled the opposing party's objection is deemed pre-admitted. Any exhibit on each side's exhibit list not specifically objected to or withdrawn at the March 7, 2014 hearing and otherwise contained within the parties' March 3, 2014 Joint Notice of Outstanding Disputes is also deemed pre-admitted. As the Court informed the parties at the pretrial hearing, a pre-admitted exhibit will not become part of the record in this case unless it is introduced, published, or otherwise used before the jury at trial. Further, objections not made during the pre-admission process are considered waived and may not be raised during trial. Objections overruled during the pre-admission process are preserved for appeal without being re-urged during the case in chief in the event the underlying exhibit is utilized at trial.

VIII. Trial Procedure

Jury Selection is scheduled for 9:00 am on March 17, 2014. The parties each have 30 minutes per side for *voir dire*, and up to 3 minutes of such *voir dire* time may be used for general

high-level background or case introduction purposes. The parties are expressly instructed to refrain from argument during *voir dire*.

Trial is scheduled to begin immediate following jury selection. As the Court has previously instructed, the parties will have 4.5 hours per side to present their evidence, not including opening and closing statements. The parties each have 15 minutes per side for opening statements and 20 minutes per side for closing statements. Court will use its best efforts to be in chambers and available by 7:30 am each day before the start of evidence to take up any housekeeping matters or late-arriving disputes that might come up during trial. Any deposition clip objections must be brought to the Court's attention on a rolling basis on the day *before* such clip is expected to be played at trial. In addition, pre-admitted exhibits used before the jury each day will be identified and their exhibit numbers read into the record the next morning before the jury is brought into the Courtroom.

IX. Procedure for Sealing the Courtroom During the Presentation of Highly Sensitive Testimony or other Evidence.

Should counsel for either party desire to seal the courtroom during the presentation of highly sensitive evidence or testimony, counsel must move to seal the courtroom before said evidence is presented or such testimony given. The parties are instructed to meet-and-confer beforehand in order to consolidate the presentation of sensitive evidence, reducing the inherent disruptions by sealing the courtroom. The parties are advised that the procedure for post-trial redactions contemplated by L.R. CV-5.2 is directed at the protection of personal identifiers, namely: (1) social security and taxpayer-identification numbers; (2) dates of birth; (3) initials of minor

children; and (4) financial account numbers. The Court will look upon motions to redact portions of the trial transcript transcribing testimony given in open court with disfavor.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:11-CV-416-JRG
	§	
GOOGLE INC.	§	
	§	
Defendant.	§	
	§	

MEMORANDUM OPINION AND ORDER

I. INTRODUCTION AND BACKGROUND

Plaintiff SimpleAir, Inc. ("SimpleAir") filed this patent infringement action against Google on September 15, 2011. At trial, SimpleAir alleged that the operation of Google's Cloud Messenger (GCM) and Cloud to Device Messenger (C2DM) (collectively the "Accused Services") infringe independent claim 1, and dependent claims 2, 3, 7, and 22 (the "asserted claims") of U.S. Patent No. 7,035,914 (the "'914 Patent"). A jury trial commenced on January 13, 2014. On January 18, 2014, the jury reached and returned its unanimous verdict, finding that the Accused Services infringed each of the asserted claims, and that the asserted claims were not invalid (Dkt. No. 601).

Google moves the Court to overturn the jury's verdict and find that: (1) SimpleAir failed to offer sufficient evidence to permit a reasonable finder of fact to determine that Google infringed the asserted claims of the '914 Patent; or (2) Google has established that the asserted claims of the '914 Patent are obvious, and therefore invalid. *See* Google's Renewed Motions for Judgment as a Matter of Law (Dkt. Nos. 636 and 637, respectively). For the reasons stated below, Google's motions are **DENIED**.

II. APPLICABLE LAW REGARDING RULE 50

Judgment as a matter of law (JMOL) is only appropriate when "a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue." Fed. R. Civ. P. 50(a). "The grant or denial of a motion for judgment as a matter of law is a procedural issue not unique to patent law, reviewed under the law of the regional circuit in which the appeal from the district court would usually lie." *Finisar Corp. v. DirectTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). The Fifth Circuit applies an "especially deferential" standard in reviewing a jury verdict. *Brown v. Bryan County*, 219 F.3d 450, 456 (5th Cir. 2000).

In deciding a motion under Rule 50(a), the Court reviews all evidence in the record and must draw all reasonable inferences in favor of the nonmoving party; moreover, the Court may not make credibility determinations or weigh the evidence, as those are solely functions of the jury. *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150-51 (2000). "A JMOL may only be granted when, 'viewing the evidence in the light most favorable to the verdict, the evidence points so strongly and overwhelmingly in favor of one party that the court believes that reasonable jurors could not arrive at any contrary conclusion.'" *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1261 (Fed. Cir. 2013) (quoting *Dresser-Rand Co. v. Virtual Automation, Inc.*, 361 F.3d 831, 838 (5th Cir. 2004)).

III. JUDGMENT OF INFRINGEMENT

A. Applicable Law Regarding Infringement

To prove infringement under 35 U.S.C. § 271, a plaintiff must show the presence of every element, or its equivalent, in the accused product or service. *Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed. Cir. 1985). First, the claim must be construed to determine its scope and meaning; second, the construed claim must be compared to the accused device or service.

Absolute Software, Inc. v. Stealth Signal, Inc., 659 F.3d 1121, 1129 (Fed. Cir. 2011) (citing Carroll Touch, *Inc. v. Electro Mech. Sys., Inc.*, 15 F.3d 1573, 1576 (Fed. Cir. 1993)). "A determination of infringement is a question of fact that is reviewed for substantial evidence when tried to a jury." *ACCO Brands, Inc. v. ABA Locks Mfr. Co.*, 501 F.3d 1307, 1311 (Fed. Cir. 2007).

B. The '914 Patent and Google's Motion

Claim 1 of the '914 Patent—the only independent claim asserted in this action—reads as follows:

> A method for transmitting data to selected remote devices, comprising the steps of:
> transmitting data from an information source to a central broadcast server;
> preprocessing said data at said broadcast server, further comprising the step of:
> parsing said data with parsers corresponding to said central broadcast server;
> transmitting said data to an information gateway for building data blocks and assigning addresses to said data blocks;
> transmitting said data blocks from said information gateway to a transmission gateway for preparing said data block for transmission to receivers;
> transmitting preprocessed data to receivers communicating with said devices; and
> instantaneously notifying said devices of receipt of said preprocessed data whether said computing devices are online or offline from a data channel associated with each device.

'914 Patent, at 33:16-35. SimpleAir alleged that Google performed each of the limitations stated in claim 1, as well as certain additional limitations found in dependent claims 2, 3, 7 and 22. The jury agreed, rendering a unanimous verdict of infringement. Google challenges nearly every aspect of that verdict. First Google argues that SimpleAir did not present sufficient evidence that Google performs certain limitations of claim 1. Next, Google argues that SimpleAir failed to introduce sufficient evidence that Google meets the additional limitations found in the dependent claims. The Court will address Google's arguments with respect to each limitation in turn.

i. Transmitting data from an information source to a central broadcast server

The first disputed limitation in claim 1 of the '914 patent reads, "transmitting data from an information source to a central broadcast server." '914 Patent, at 33:18-19. The Court construed the term "information source" to mean "one or more content or online service providers that provide data to the central broadcast server, such as an online source of news, weather, sports, financial information, games, personal messages, or e-mails." Claim Construction Order, Dkt. No. 379, at 27-28. The Court construed the term "central broadcast server" to mean "one or more servers that are configured to receive data [from] a plurality of information sources and process the data prior to its transmission to one or more selected remote computing devices." *Id.* at 41.

SimpleAir presented three theories of infringement to the jury with respect to this limitation:

(1) Google performs this step when a Google application server sends data to the GCM [Google Cloud Messenger] FrontEnd server;

(2) Google performs this step when the GCM FrontEnd server sends data from a Google or third party application server to the GCM BackEnd; and

(3) Third party application servers perform this step when they send data to the GCM FrontEnd server, and their performance of this step is attributable to Google because Google controls and directs the entire GMC method.

Dkt. No. 694, at 7. SimpleAir's first two theories describe "first-party" conduct, where Google itself is acting to satisfy this "transmitting" limitation. SimpleAir's third theory involves the performance of the claimed step by a third-party, whose actions are allegedly attributable to Google. The Court must uphold the jury's verdict if substantial evidence supports any one of SimpleAir's theories. *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 850 (Fed. Cir. 2010) ("the verdict must be upheld if substantial evidence supports either legal theory").

1. SimpleAir's theory No. 1

As a threshold matter, Google has conceded that this limitation is met under SimpleAir's first theory, when Google application servers send data to the GCM FrontEnd server. *See* Reply, Dkt. No. 730, at n.1. Moreover, both parties' experts testified that Google performs "transmitting data from an information source to a central broadcast server" when such first-party application servers (*e.g.* Gmail, Google Plus, or Google Hangout servers) transmit data from those servers to the GCM BackEnd. Dkt. No. 611 (1/13/2014 pm transcript (Knox)), at 115:7-23; Dkt. No. 612 (1/14/2014 am transcript (Knox)), at 9:9-11:14, 12:1-9; Dkt. No. 617 (1/15/2014 pm transcript (Williams)), at 177:4-12. This undisputed testimony provides substantial evidence supporting the jury's conclusion that Google meets this limitation under SimpleAir's first theory.

2. SimpleAir's theory No. 2

With respect to SimpleAir's second theory of infringement, the parties dispute the construction of the "transmitting" limitation. Google argues that the "*from*" in "transmitting data *from* an information source to a central broadcast server" requires that the "information source" perform the sending of the data to the "central broadcast server." *See* Dkt. No. 636, at 11-12. Google accuses SimpleAir of attempting to rewrite the claim to read "transmitting data [taken] from an information source…" in order to claim infringement when data is sent from one portion of the central broadcast server to another portion of the central broadcast server. *See* Dkt. No. 730, at 4. SimpleAir counters that the "transmitting" limitation does not require that the information source perform the sending, merely that the data that is sent originate at the information source. *See* Dkt. No. 694, at 11 ("data *taken from* an information source is *from* that source") (emphasis in original).

During claim construction, Google and its then co-defendant Microsoft proposed the following construction of "central broadcast server":

> one or more servers that receive data transmitted by a plurality of information sources and process the data prior to its transmission to one or more selected remote computing device[s].

Defendants' Responsive Claim Construction Brief, Dkt. No. 329, at 38. However, Google's argument with respect to the term was limited to whether or not a central broadcast server must actually receive data from information sources, as opposed to being "configured to receive" the same.

SimpleAir raised the issue of Google's proposed construction, and the "transmitted by" language that Google proposed in both its briefing and at the hearing. *See* Plaintiff's Opening Claims Construction Brief, Dkt. No. 302; Transcript of Claim Construction Hearing, Dkt. No. 378, at 135:25-138:1. However, Google effectively ignored the issue. At no point did Google argue that its proposed construction would include a limitation requiring the information source(s) to perform the sending of data. *See* Defendants' Responsive Claim Construction Brief, Dkt. No. 329, at 38. Similarly, counsel for Google made no argument at the claim construction hearing regarding such a requirement. *See* Transcript of Claim Construction Hearing, Dkt. No. 378, at 138-139.

Having been silent on this issue during claim construction, Google has waived its right to attack the Court's construction in a post-trial motion. *Lazare Kaplan Int'l, Inc. v. Photoscribe Techs., Inc.*, 628 F.3d 1359, 1376 (Fed. Cir. 2010) ("As we have repeatedly explained, litigants waive their right to present new claim construction disputes if they are raised for the first time after trial.") (internal citation omitted); *see also Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255,

1262 (Fed. Cir. 2013) *cert. denied*, 134 S. Ct. 1013, 187 (2014) (holding that a defendant cannot mount a post-trial attack on a claim construction to which it had agreed).

Accordingly, whether "transmitting data from an information source to a central broadcast server" includes the transmission of data *taken from* said information source(s) becomes a purely factual issue. *Versata*, 717 F.3d at 1262. SimpleAir's expert, Dr. Knox, testified that (1) a Google server, the GCM FrontEnd, transmits data to a second Google server, the GCM BackEnd; and (2) that the data transmitted from the GCM FrontEnd constitutes data from an information source, *i.e.* data from a Google or third party application server. 1/13/2014 pm trial transcript, Dkt. No. 611, at 118:10-124:1; 131:15-133:6. Google's counsel cross examined Dr. Knox on this issue, closing with the comment, "we'll let the jury decide that." Dkt. No. 212 (1/14/2014 am trial transcript (Knox)) at 74:22-77:4. Ultimately, the jury chose to accept Dr. Knox's testimony and decided this issue in favor of SimpleAir. Google has not offered anything via this JMOL that would meet the high standard required to disregard the jury's finding of fact in this regard.

3. SimpleAir's theory No. 3

SimpleAir's third and final theory of infringement for the first "transmitting" element is that Google is liable for infringement because it controls or directs the entire GCM process, and therefore the "transmitting data from an information source to a central broadcast server" by third wholly becomes attributable to Google. Because the Court has found that the jury's verdict is supported by substantial evidence of infringement under SimpleAir's first two theories, the Court does not address SimpleAir's third, "joint infringement" theory. *See i4i Ltd. P'ship*, 598 F.3d at 850 ("the verdict must be upheld if substantial evidence supports either legal theory").

ii. preprocessing said data at said central broadcast server, further comprising the step of parsing said data with parsers

The parties dispute the proper reading of the second limitation in claim 1 of the '914. The relevant claim language reads:

> preprocessing said data at said central broadcast server, further comprising the step of: parsing said data with parsers corresponding to said central broadcast server;

'914 Patent, at 33:20-23. Google argues that the above language describes two separate and distinct limitations: (1) preprocessing said data at said broadcast server; and (2) parsing said data with parsers. Dkt. No. 636, at 13-14. Google then argues that SimpleAir failed to provide sufficient evidence from which a reasonable jury could conclude that the Accused Services meet either limitation. *Id.* at 14-16. SimpleAir disputes Google's reading of the claim, arguing that parsing is a specific type of preprocessing sufficient to meet both steps set out in the claim, and that it introduced substantial evidence of such parsing. Dkt. No. 694, at 19-21. Alternatively, SimpleAir contends that it introduced evidence of preprocessing, other than parsing. *Id.* 19-20.

1. "Parsing" is sufficient to satisfy the claim language.

Again, the relevant claim requires the preprocessing of data at the central broadcast server, "*further* comprising the step of: parsing said data with parsers." '914 Patent, at 33:20-23 (emphasis added). According to Google, the use of the term "further" in the relevant claim language requires: (1) the preprocessing of data, *in addition to* (2) "parsing said data with parsers." Dkt. No. 636, at 13. Google failed to raise this argument during claim construction or at trial. Google is not permitted to raise it now, for the first time. S*ee Lazare Kaplan Int'l, Inc.*, 628 F.3d at 1376.

Even if Google had not waived its challenge to the Court's construction, the Court is not persuaded that the claim requires two distinct steps of: "preprocessing" and "parsing." Rather,

the Court finds that various types of preprocessing (including parsing) satisfy the former, and that the latter further requires a specific type of preprocessing—namely, parsing. SimpleAir presented substantial evidence that the Accused Services "parse[] said data with parsers." *See* 1/13/2014 pm Trial Transcript, Dkt. No. 611, at 134:14-155:11; 147:8-149:19; Plaintiff's Exhibit ("PX") 115; PX 134. Such evidence is sufficient to support the jury's verdict that the Accused Services preprocess data as required by the asserted claims.

2. SimpleAir has introduced substantial evidence of other types of "preprocessing."

Although SimpleAir presented evidence of parsing sufficient to uphold the jury's verdict, SimpleAir has also presented evidence that Google performs preprocessing, other than parsing. For example, SimpleAir presented evidence that the GCM FrontEnd verifies the origin of GCM messages received from third parties before transmitting them to the GCM BackEnd. *See* 1/15/2014 pm Trial Transcript, Dkt. No. 617, at 27:12-21; PX 115 (relating to verification of messages at the GCM FrontEnd). Accordingly, substantial evidence in the record supports the jury's verdict with respect to the "preprocessing" step.

3. "Parsing" does not require the parsing of payload data.

Finally, Google argues that the term "data" within the limitation "parsing said data with parsers corresponding to said central broadcast server" must include the payload of a message. Motion, Dkt. No. 636, at 14-16. Google further argues that SimpleAir has failed to present evidence that Google parses the payload of GCM messages. *Id.*

SimpleAir concedes that its evidence of "parsing" was limited to the parsing of the entire TCP/IP packet that is sent to Google's GCM service—not just the payload. Response (Dkt. 694), at 20-21. However, SimpleAir presented evidence that "data" would be understood by a person

of ordinary skill in the art to include the entire TCP/IP packet, not just the payload. *Id.* (citing 1/13/2014 pm Trial Transcript, Dkt. No. 611, at 152:24-155:11; 1/15/2014 pm Trial Transcript, Dkt. No. 617, at 65:15-68:3; 70:14-73:10; PX 115). Having reviewed the evidence and the parties' arguments, the Court is not persuaded that Google must parse only the payload of a message in order to meet the "parsing" limitation. Accordingly, there is substantial evidence supporting the jury's verdict.

iii. transmitting said data to an information gateway for building data blocks and assigning addresses to said data blocks

The next disputed limitation requires, "transmitting said data to an information gateway for building data blocks and assigning addresses to said data blocks." '914 Patent at 33:24-26. In its Motion, Google challenges the evidence supporting the jury's verdict with respect to the final element, "assigning addresses to said data blocks."

To satisfy this claim element, Plaintiff's introduced evidence that the Accused Services assign the address of a unique "MCS endpoint" to GCM messages. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at155:15-162:8. Google now argues that "the plain and ordinary meaning of claim 1 requires addressing the message to a device—i.e., the intended destination of the message." Dkt. No. 636, at 16. Google further argues that the address for the MCS endpoint does not qualify as a destination address, and that Google is therefore entitled to a JMOL that this claim element is not met. *Id.* at 17-19.

In response, SimpleAir argues that: (1) the ordinary meaning of "address" is not limited to the address of a particular destination (*i.e.* a device); and alternatively (2) the MCS endpoint address is a destination address because it is the only address that the data block needs in order to be delivered to its intended recipient. Dkt. No. 694, at 22.

Since this issue was not raised at claim construction, the Court did not expressly construe the term "addresses" or the phrase "assigning addresses to said data blocks." The term and phrase are therefore required to be given their plain and ordinary meaning, as understood by one of ordinary skill in the art at the time of the invention. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005). Having reviewed the '914 patent and the testimony offered at trial, The Court is not persuaded that the phrase "assigning addresses to said data blocks" requires the assignment of destination addresses, as Google argues. No such limiting language is found in the claims at issue, *see* '914 Patent at 33:24-26, and SimpleAir's expert testified that that addresses identified in the claims were not required to be so limited. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 162:19-20.

Moreover, even if the Court were to accept Google's argument and find that the claim requires the assignment of so-called "destination addresses," SimpleAir has introduced sufficient evidence to support the jury's verdict. SimpleAir's Expert testified that the MCS endpoint address is "the address [the Accused Service] needs to cause that message to go to that phone." Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 161:14-23. The Court is persuaded that the MCS endpoint address therefore qualifies as a "destination address." In making its contrary argument, Google relies on a faulty premise, *i.e.* that a destination address must be the address of the target device itself (*e.g.* a phone). Such a requirement would exclude assigning the address of the "receiver associated with the destination device," which (1) is the preferred embodiment described in the specification of the '914 Patent, and which (2) Google concedes is a destination address. *See* Dkt. No. 612 (1/14/2014 am transcript (Knox)) at 100:15-101:6 (describing the preferred embodiment); Reply (Dkt. No. 730), at 6 (conceding that the address of the receiver qualifies as the address required by the claims).

Because the ordinary meaning of "address" is not limited to destination addresses, and because the MCS endpoint address identified by SimpleAir is a destination address, SimpleAir has introduced sufficient evidence to support the jury's conclusion that the Accused Services "transmit[] said data to an information gateway for building data blocks and assigning addresses to said data blocks."

iv. transmitting preprocessed data to receivers communicating with said devices

The next disputed limitation requires, "transmitting preprocessed data to receivers communicating with said devices." '914 Patent at 33:30-31. During trial, SimpleAir's expert testified that the Accused Services perform the transmitting step at issue when Google's MCS server transmits messages to the receivers in Android smartphones and tablets. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 167:25-172:2. Google's expert further admitted that the MCS "initiates" the communication to the Android device. *See* Dkt. No. 618 (1/14/2014 am transcript (Williams)) at 38:21-43:9.

However, Google argues that (1) the actual "transmitting preprocessed data to receivers" is not performed by Google, but by the carrier infrastructure; and, (2) Google does not direct or control the carrier in such a manner that would subject it to liability under the joint infringement standard. *See Aristocrat Techs. Austl. PTY Ltd. v. Int'l Game Tech.*, 709 F.3d 1348, 1363 (Fed. Cir. 2013) (declining to impose liability for joint infringement in the absence of an agency relationship, joint enterprise, or other theory under which the accused infringer would be vicariously liable for the actions of third parties). SimpleAir counters that this is not a joint infringement case. It alleges that Google transmits the relevant messages, albeit indirectly, using the MCS server. Dkt. No. 694, at 23-24. Accordingly, SimpleAir asserts that Google is liable

for direct infringement under *SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1329-30 (Fed. Cir. 2010).

The *SiRF* case dealt with patents covering the field of GPS technology. *Id.* at 1321. The relevant claims recited the steps of "communicat[ing] the satellite ephemeris to a mobile GPS receiver at a second location," (claim 1 of the asserted '651 Patent) and "transmitting the formatted data to a remote receiver" (claim 1 of the asserted '000 Patent). *Id.* at 1329 n.7, n.8. In that case, the defendants made substantially the same argument that Google now advances; *i.e.* that the "transmitting" and "communicating" steps were performed by third parties, and that the defendants did not direct or control the third parties so as to subject themselves to liability for joint infringement. *Id.* at 1329.

The Federal Circuit rejected this argument. It found that the performance of the claims did not require the actions of third parties, and held that the joint infringement standard was therefore not applicable. *Id.* at 1329 ("We do not reach the question of joint infringement because we do not read the relevant claims as requiring that any of the specified actions be taken by SiRF's customers or by the end users of the GPS devices."). The Federal Circuit explained that the defendant in *SiRF* personally performed the "communicating" and "transmitting" steps—notwithstanding the downstream actions of third parties—"because [the defendant] initiates the process of transmitting and communicating, and the files are actually transmitted to the end users." *Id.* at 1330.

The claim element at issue in this case, "transmitting data to receivers," is nearly identical to the claim language asserted in *SiRF*, "transmitting the formatted data to a remote receiver." In this case, as in *SiRF*, "[n]either the claim language nor the patent specification requires that the communication/transmission be direct." *Id.* Moreover Google's own expert admits that

Google's MCS server "initiates the information flow" that causes the receipt of data in an Android phone or tablet. *See* Dkt. No. 618 (1/14/2014 am transcript (Williams)) at 38:21-43:9. Accordingly, SimpleAir has introduced substantial evidence that Google performs the "transmitting" limitation which adequately supports the jury's verdict.

v. instantaneously notifying said devices of receipt of said preprocessed data whether said computing devices are online or offline from a data channel associated with each device

Google contends that SimpleAir has failed to provide sufficient evidence to support the jury's verdict that the Accused Services "instantaneously notify[] said devices of receipt of said preprocessed data whether said computing devices are online or offline from a data channel associated with each device." Dkt. No. 636, at 22. Google makes two specific arguments: (1) that SimpleAir failed to introduce any evidence that the device is notified of the receipt of data when an accused Android device is online from a data channel, and (2) that the evidence shows that components within the phone—not Google itself—perform the "instantaneously notifying" limitation. Dkt. No. 636, at 22-23.

1. SimpleAir introduced substantial evidence supporting the jury's verdict that Google's Accused Services meet the limitation when the device is "online from a data channel."

SimpleAir's expert testified that the "instantaneously notifying" limitation is met when Google transmits push notification data from the GCM server to receivers in Android smartphones and tablets, and this transmission automatically causes the processor in the phone or tablet to be notified. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 173:4-18; 174:17-175:9. This expert further testified that the GCM server can and does transmit data to Android devices when such devices are "online from a data channel." *Id.* at 178:10-179:14 ("Even if [the application server] already has a direct connection [to the device], it can still send a [] message through

GCM."); *see also id.* at 180:22-181:4; 181:15-25. Google's representative confirmed this testimony. *See* Dkt. No. 613 (1/14/2014 pm transcript (Nerieri)) at 18:20-19:19.

Google disputes the credibility and accuracy of SimpleAir's expert testimony, citing the contrary testimony of its expert, Dr. Williams. Google is asking the Court to act in a manner that is not appropriate in a JMOL. Here, the Court must draw all reasonable inferences in favor of the nonmoving party and the Court may not make credibility determinations or weigh the evidence. *Reeves*, 530 U.S. at 150-51. The jury was not compelled to accept Google's witnesses over SimpleAir's, and in siding with SimpleAir, the jury's verdict is nonetheless supported by substantial evidence.

2. Google's joint infringement defense is unavailing.

As discussed above, SimpleAir's expert testified that the "instantaneously notifying" limitation is met when Google transmits push notification data from the GCM server to receivers in Android smartphones and tablets, and this transmission automatically causes the processor in the phone or tablet to be notified. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 173:4-18; 174:17-175:9. Google does not contradict this evidence. Instead, Google asserts that the receiver in the relevant Android device—not Google—notifies the processor in said device that data has been received. Dkt. No. 636, at 24. Google further argues that there is no evidence that it directs or controls the actions of third party receivers, therefore it cannot be held liable under the joint infringement standard. *Id.* at 25.

There are two steps which the Court must consider when evaluating Google's joint infringement defense. First, the Court must determine whether there is an issue of joint infringement in the first place; that is, whether any of the limitations or steps required by the asserted claims are performed by one or more third parties. If a joint infringement issue is

present, Google will only be held liable for the performance of claimed steps where it controls or directs the actions of said third party(ies). *See Aristocrat Techs.*, 709 F.3d at 1362. In this case, the Court need not reach the question of joint infringement because Google is personally responsible for the performance of the "instantaneously notifying" limitation under *SiRF*, 601 F.3d 1319 (Fed. Cir. 2010). However, even if the Court were to apply the joint infringement standard, it is apparent that Google controls the performance of the relevant third parties, and would therefore still be liable for infringement.

a. Google is personally liable for the performance of the "instantaneously notifying" limitation.

SimpleAir introduced substantial evidence showing that the "instantaneous notifying" limitation is not performed by "components within" an android phone or tablet, but by Google's MCS server which transmits the relevant data to Android devices and by so doing automatically causes notification of the processors within such devices. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 173:4-18; 174:17-175:9. This evidence is more than sufficient to support a jury's verdict of infringement under *SiRF*, 601 F.3d at 1331 (internal citation omitted).

b. Google controls the receivers in Android phones and tablets.

For method claims, as are asserted in this case, a defendant is liable for infringement only if it performs "all the steps of the claimed method, either personally or through another acting under his direction or control." *Aristocrat*, 709 F.3d at 1362 (internal citation omitted). "[T]he control or direction standard is satisfied in situations where the law would traditionally hold the accused direct infringer vicariously liable for the acts committed by another party that are required to complete performance of a claimed method." *Id.* (citing *Muniauction*, 532 F.3d at 1330).

SimpleAir introduced evidence showing that Google controls the entire process of sending messages to Android devices using the accused GCM service—including the operation of the receivers that perform (unclaimed) intermediate steps. *See* Dkt. No. 617 (1/15/2014 pm transcript (Nerieri)) at 30:13-36:23; PX 50; DX 29; DX 204. A similar situation was recently addressed by this Court in *TQP Dev., LLC v. Intuit Inc.*, 2014 U.S. Dist. LEXIS 84054. In that case, Judge Bryson addressed the situation where certain steps of the claimed method were performed by the defendants' servers, while certain other steps were performed by "[the defendants'] clients' computers, with which the defendants' servers are in communication." In denying the defendants' motion for summary judgment, Judge Bryson noted that:

> TQP has offered evidence through its expert that the defendants' servers direct or control the client computers because, once the process begins, the steps taken by the servers in encrypting and transmitting data automatically produce a predictable, corresponding response in the client computers that receive and decrypt the data. . . According to TQP's evidence, the use of the RC4 algorithm in both the server and client computers dictates that the steps taken by the server at the encryption and transmission stage result in performance of the corresponding steps in the receiver. Thus, according to TQP's evidence, once the respective computers are suitably programmed and the RC4 algorithm is selected, the defendants' servers dictate the response of the client computers that will perform the "receiver stage" steps of the claimed process.

Id. at *41-42. Similarly in this case, SimpleAir has introduced substantial evidence showing that when Google's MCS server transmits data to an Android device, the processor in that device is automatically notified of the receipt of data. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 174:17-175:9. This testimony was corroborated by Google's representative, who testified that GCM code on the Android device receives messages from the GCM server. *See* Dkt. No. 617 (1/15/2014 pm transcript (Nerieri)) at 28:8-21 ("And finally, the message makes it to the GCM code on the device."). Further, SimpleAir's evidence was not contradicted by Google's expert,

who expressed no opinion on this issue. *See* Dkt. No. 188 (1/16/2014 am transcript (Williams)) at 43:3-9.

Accordingly, to the extent that Google is correct in asserting that the end-user or the Android device performs the notifying step, there is sufficient evidence in the record from which the jury could fairly conclude that Google's Control of the GCM service is so extensive that any actions performed by the end user or android device are attributable to Google.

vi. Substantial evidence shows that Google assigns multiple addresses to multiple data blocks, transmits data to multiple receivers, and instantaneously notifies multiple devices of the receipt of said data.

Google's final argument with respect to claim 1 (which necessarily applies to the dependent claims as well), rests on Google's assertion that the claim one "require[s] assigning multiple addresses to data, transmitting the data to multiple receivers communicating with multiple devices, and having multiple receivers instantaneously notify multiple devices of receipt of said data." Dkt. No. 636, at 26.

It is undisputed that Google's GCM service delivers millions of messages to millions of devices, every day. Therefore, the Court understands Google to be arguing that the asserted claims require:

(1) that *multiple* addresses be assigned to the *same* data blocks;

(2) that the *same* data blocks be transmitted to *multiple* receivers; and

(3) that the Accused Services instantaneously notify *multiple* devices of the receipt of the *same* data.[1]

This argument is meritless. As stated above, the Court finds that SimpleAir introduced sufficient evidence to support the jury's verdict that the Accused Services meet each of the

[1]Google has not challenged this characterization of its argument. *See* Dkt. No. 730 at 9.

disputed imitations raised in Google's Motion. Nothing in the claims requires that multiple addresses be assigned to a single group of data blocks; and, nothing in the claims requires that a single group of data blocks transmitted to multiple receivers (*i.e.*, by sending a single message at the same time to multiple devices). *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 107:19-108:2. Even assuming that the claims could be read to require such treatment, SimpleAir introduced substantial evidence showing that GCM allows for—and performs—the sending of one message to multiple recipients. *See* Dkt. No. 611 (1/13/2014 pm transcript (Knox)) at 108:3-6; Dkt No. 618 (1/16/2014 am transcript (Williams)) at 35:22-38:3. Accordingly, even if the Court were to adopt Google's strained reading of the claims—which the Court does not—substantial evidence would nevertheless support the jury's verdict.

vii. Substantial evidence supports the jury's verdict that Google performs each limitation of the dependent claims.

Google argues that SimpleAir failed to introduce sufficient evidence to support the jury's verdict that Google performs, or directs or controls others' performance of, the steps required in dependent claims 2 and 22. Google's argument consists of a single sentence directed to each claim, and Google provides no explanation or analysis that might support its assertions. *See* Dkt. No. 636, at 27. With respect to dependent claims 3 and 7, Google's argument is limited to a recitation of its allegation that third parties, not Google, "actually transmit the preprocessed data." *Id.*

This Court's Local Rule 7 requires a "concise statement of the reasons in support of the motion and a citation of the authorities upon which the movant relies." The Court will not ignore its own local rule and entertain bare assertions of the kind Google puts forward here. Google has failed to meet even the low bar set by the Court's Local Rules and Federal Rule of Civil Procedure

7(b)(1)(B). The Court therefore concludes that Google has waived its challenge to the jury's verdict with respect to the dependent claims asserted by SimpleAir, except to the extent that infringement of the dependent claims requires infringement of independent claim 1, addressed above.

However, and even had Google not effectively waived its challenge to the asserted dependent claims, SimpleAir introduced sufficient evidence during the trial to support the jury's verdict with respect to claims 2, 3, 7 and 22. *See e.g.* Dkt. No. 612 (1/14/2014 am transcript (Knox)) at 18:19-26:16. Further, and for the same reasons discussed above, SimpleAir provided substantial evidence at trial that Google, and not a third party, performs the "transmitting" steps at issue. The jury's verdict must consequently be upheld.

IV. JUDGMENT OF NO INVALIDITY

At trial, Google presented evidence that the combination of three pieces of prior art rendered the asserted claims of the '914 Patent obvious, and therefore invalid:

(1) the "SkyTel System" (a network of information sources, receivers, and consumer devices);

(2) U.S. Patent No. 5,819,284 ("the '284 Patent" or "the AT&T Patent") (DX 376); and

(3) U.S. Patent No. 5,327,486 ("the '486 Patent" or "the Bell Patent") (DX 383).

As a threshold matter, SimpleAir challenged Google's assertion that the SkyTel system qualifies as a single prior art reference, arguing that the SkyTel system is itself a combination of seventeen individual prior art references. SimpleAir further argued that the cited prior art—whether counted as three or nineteen references—failed to disclose certain limitations stated in the asserted claims, and that it would not have been obvious to one of ordinary skill in the art to combine the SkyTel System with the '284 and '486 Patents. After hearing the evidence presented by both

parties, the jury rendered a verdict that the asserted claims of the '914 Patent were not invalid. Dkt. No. 601.

A. Applicable Law

As stated above, JMOL is appropriate where "a reasonable jury would not have a legally sufficient evidentiary basis to find for the [non-moving] party on that issue." *i4i Lt. Partnership*, 598 F.3d at 841. The jury's verdict has a legally sufficient evidentiary basis if it is supported by substantial evidence, which is "more than a mere scintilla" and is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *z4 Techs. Inc. v. Microsoft Corp.*, 507 F.3d 1340, 1353 (Fed. Cir. 2007) (internal citations omitted). In evaluating Google's JMOLs, the Court "reviews all evidence in the record and must draw all reasonable inferences in favor of the nonmoving party; however, a court may not make credibility determinations or weigh the evidence, as those are solely functions of the jury." *Fractus, S.A. v. Samsung Elecs. Co.*, 876 F. Supp. 2d 802, 813 (E.D. Tex. 2012) (citing *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150-51 (2000)).

Further, Google had the burden of proving invalidity at trial by clear and convincing evidence. *See e.g. Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1334 (Fed. Cir. 2013). "The Federal Circuit is clear that '[c]ourts grant JMOL for the party bearing the burden of proof only in extreme cases, when the party bearing the burden of proof has established its case by evidence that the jury would not be at liberty to disbelieve and the only reasonable conclusion is in its favor.'" *Hitachi Consumer Elecs. Co. v. Top Victory Elecs. Taiwan Co.*, 2013 U.S. Dist. LEXIS 133595, at *15 (E.D. Tex. Sept. 18, 2013) (quoting *Mentor H/S, Inc. v. Med. Device Alliance, Inc.*, 244 F.3d 1365, 1375) (Fed. Cir. 2001).

B. Analysis

35 U.S.C. § 103 "forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 405, 127 S. Ct. 1727, 167 L. Ed. 2d 705 (2007) (quoting 35 U.S.C. § 103). Where, as here, a defendant seeks to invalidate a patent as obvious in light of a combination of prior art, it must demonstrate "'that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.'" *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (quoting *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)). At all times, the defendant bears the burden the burden of establishing, by clear and convincing evidence, that the patent is obvious. *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012).

i. SimpleAir introduced substantial evidence that the cited prior art fails to disclose each limitation of the asserted claims.

At trial, the parties disputed whether or not the cited prior art discloses each limitation of the asserted claims. In particular, SimpleAir asserted that the prior art fails to disclose notification "whether said computing devices are online or offline from a data channel." Google disagreed, arguing that the limitation was met by the Skytel System, and specifically by the connection between: (1) a Sony Magic Link device, (2) AT&T Personal Link, and (3) AOL. *See* Dkt. No. 618 (1/16/2014 am transcript (Eastburn)) at 127:5-139:15.

At trial, SimpleAir introduced expert testimony that the connections to AT&T Personal Link and AOL do not meet the definition of a "data channel," as construed by the Court, and that Sony Magic Link devices could not receive data "whether [they] are or are not connected to a data channel." *See* Dkt. No. 619 (1/16/2014 pm transcript (Knox)) at 22:19-25:15. Unsurprisingly, Google introduced contradictory expert testimony and other evidence in an effort to convince the jury that the cited prior art rendered the asserted claims obvious and therefore invalid. *See e.g.* Dkt. No. 618 (1/16/14 am transcript (Eastburn)) at 121:15-144:8. Confronted with such contradictory expert testimony, "the jury was free to 'make credibility determinations and believe the witness it considers more trustworthy.'" *Kinetic Concepts, Inc.*, 688 F.3d at 1362 (citing *Streber v. Hunter*, 221 F.3d 701, 726 (5th Cir. 2000)). In light of the jury's verdict that Google failed to prove obviousness, the Court must infer that the jury found SimpleAir's expert to be credible and persuasive on this point, and accepted his testimony over that of Google's expert. *Id.* With that inference, there is substantial evidence supporting the jury's conclusion that the cited prior art failed to disclose notification "whether said computing devices are online or offline from a data channel."

To prove obviousness, Google must show that a skilled artisan would have had a reasonable expectation of success in combining or modifying the cited prior art to achieve the invention expressed in the asserted claims. *See Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008). Inferring, as the Court must, that the notification limitation was missing from the cited prior art, it follows that a mere combination of the cited prior art could not succeed. Because Google has not even argued that it would have been obvious to modify the prior art to achieve the claimed invention, and because SimpleAir introduced evidence that such modification

would not have been obvious, *see* Dkt. No. 619 (1/23/2014 pm transcript (Knox)) at 25:16-27:16, there is more than enough evidence in the record to support the jury's verdict of no invalidity.

ii. Google failed to show by clear and convincing evidence that it would have been obvious to combine or modify the cited prior art.

"[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR International Co.*, 550 U.S. at 418. Instead, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art [1] would have had reason to attempt to make the composition or device, or carry out the claimed process, and [2] would have had a reasonable expectation of success in doing so." *Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see also KSR International Co.*, 550 U.S. at 418 (it can be "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine elements" of the prior art); *Kinetic Concepts*, 688 F.3d at 1366 ("Even if the references disclosed all of the limitations of the asserted claims, which they do not, [defendant] still needed to proffer evidence indicating why a person having ordinary skill in the art would combine the references to arrive at the claimed invention."

At trial, Google primarily relied on testimony from its expert witness that the Skytel System comprised a single prior art reference, and that it would have been obvious to one of ordinary skill in the art to combine the SkyTel System with the '284 and '486 Patents. *See e.g.* Dkt. No. 618 (1/16/2014 am transcript (Eastburn)), at 127:21-130:12. SimpleAir introduced contrary testimony from its expert. Specifically, SimpleAir's expert testified that there was never a unitary "SkyTel system," but rather that the SkyTel System was itself a combination of seventeen prior art references. Dkt. No. 619 (1/16/2014 pm transcript (Knox)), at 14:7-15:22. SimpleAir's expert

further testified that it would not have been obvious to one of ordinary skill in the art to combine the seventeen Skytel Network references with the two patents also cited by Google. *Id.* at 25:16-27.

Having reviewed the entire record and drawing all reasonable inferences in the nonmoving party's favor, the Court is not persuaded that Google has established its case by evidence that the jury would "not be at liberty to disbelieve," or that the only reasonable conclusion the jury could have drawn was that it would have been obvious to combine the cited prior art to accomplish the patented invention. *Hitachi*, 2013 U.S. Dist. LEXIS 133595, at *15. For example, much of the expert testimony Google presented at trial consisted of conclusory statements that one of ordinary skill would have combined the references Google cited. *See* Dkt. No. 618 (1/16/2014 am transcript (Eastburn)) at 127:18-128:8 (stating that it would be obvious to combine the SkyTel System and AT&T Patent because "the Skytel system received similar types of information"). The jury was free to disregard such testimony, and the Court must infer that it did. *See Fractus S.A. v. Samsung Elecs. Co.*, 876 F. Supp. 2d 802, 827 (E.D. Tex. 2012) ("Such conclusory testimony regarding obviousness failed to provide the jury with an understanding of why a person of ordinary skill would have found the limitations obvious."

Google seems to argue that jury's verdict is insupportable, because it does not track the narrative that Google's witnesses advanced at trial. This is not an argument upon which the Court may grant JMOL. The jury is the only entity empowered to "make credibility determinations or weigh the evidence." *Id.* at 813. It was free to disregard the conclusory statements made by Google's expert or otherwise credit the evidence introduced by SimpleAir over the evidence introduced by Google. Indeed, because of the procedural posture of this case, the Court *must* assume that the jury found SimpleAir's experts and other witnesses to be credible and persuasive.

See Kinetic Concepts, Inc., 688 F.3d at 1365. Accordingly, there is more than enough evidence in the record to support the jury's verdict.

iii. The jury could have reasonably concluded that the objective evidence established that the asserted claims were not obvious.

"The final underlying factual issue in the obviousness determination is objective evidence of non-obviousness, *i.e.*, secondary considerations." *WMS Gaming, Inc. v. International Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999). Such secondary considerations "may include commercial success, long-felt but unsolved need, and licenses showing industry respect," which may support a jury's verdict of non-obviousness. *See Id.*; *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling*, 699 F.3d 1340, 1349 (Fed. Cir. 2012); *Fractus, S.A. v. Samsung Elecs. Co.*, 876 F. Supp. 2d 802, 827-28 (E.D. Tex. 2012).

Here, SimpleAir introduced evidence of several secondary considerations indicating non-obviousness, including evidence related to industry praise for SimpleAir and the commercial embodiment of the asserted claims; and, evidence that other companies in the industry, including Apple, Microsoft, and RIM entered into licensing agreements with SimpleAir. *See* Dkt. No. 615 (1/15/2014 am transcript (Payne) at 30:7-34:1 (describing awards); PX 98 at 31 (summarizing awards); Dkt No. 614 (1/14/2014 pm transcript (Mills)) 49:12-50:12 (describing industry licenses); PX 181 (Apple Agreement); PX 295 (Microsoft Agreement); DX 355 (RIM Agreement). Such evidence is sufficient to support the jury's verdict, and defeat Google's motion.

V. CONCLUSION

For all of the reasons stated above, Google's Renewed Motion for Judgment as a Matter of Law Regarding Infringement (Dkt. No. 636) and Google's Renewed Motion for Judgment as a Matter of Law Regarding Invalidity (Dkt. No. 637) are hereby **DENIED** in all respects.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:11-CV-416-JRG
	§	
GOOGLE INC.	§	
	§	
Defendant.	§	
	§	

MEMORANDUM OPINION AND ORDER

I. Introduction.

Plaintiff SimpleAir, Inc. ("SimpleAir") filed this patent infringement action against Google on September 15, 2011. At trial, SimpleAir alleged that the operation of Google's Cloud Messenger (GCM) and Cloud to Device Messenger (C2DM) (collectively the "Accused Services") infringe independent claim 1, and dependent claims 2, 3, 7, and 22 (the "asserted claims") of U.S. Patent No. 7,035,914 (the "'914 Patent"). A jury trial commenced on January 13, 2014. On January 18, 2014, the jury reached and returned its unanimous verdict, finding that the Accused Services infringed each of the asserted claims, and that the asserted claims were not invalid. Dkt. No. 601.

However, the same jury was unable to reach a unanimous verdict with respect to the amount of damages. Accordingly, the Court entered judgment with respect to the separate issues of validity and infringement, and ordered a new trial on damages to be set for March 17, 2014. Dkt. No. 634; 635. A new jury was seated and a trial concerning damages only began on March 17, 2014. On March 19, 2014, that jury returned a unanimous verdict awarding $85 million in damages to SimpleAir. Dkt. No. 718.

In the motion presently before the Court, Google seeks to overturn the jury's damages verdict, arguing that SimpleAir failed to offer sufficient evidence to support the jury's award of $85 million, and more specifically, that SimpleAir's expert witnesses provided unreliable testimony, which should have been excluded or stricken under Federal Rule of Evidence 702. *See* Google's Renewed Motion for Judgment as a Matter of Law (Dkt. No. 748).

Having considered the arguments of the parties, and for the reasons stated below, Google's motion is **DENIED**.

II. Applicable law regarding Rule 50.

Judgment as a matter of law (JMOL) is only appropriate when "a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue." Fed. R. Civ. P. 50(a). "The grant or denial of a motion for judgment as a matter of law is a procedural issue not unique to patent law, reviewed under the law of the regional circuit in which the appeal from the district court would usually lie." *Finisar Corp. v. DirectTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). The Fifth Circuit applies an "especially deferential" standard in reviewing a jury verdict. *Brown v. Bryan County.*, 219 F.3d 450, 456 (5th Cir. 2000).

In deciding a motion under Rule 50, the Court reviews all evidence in the record and must draw all reasonable inferences in favor of the nonmoving party; moreover, the Court may not make credibility determinations or weigh the evidence, as those are solely functions of the jury. *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150-51 (2000). "A JMOL may only be granted when, 'viewing the evidence in the light most favorable to the verdict, the evidence points so strongly and overwhelmingly in favor of one party that the court believes that reasonable jurors could not arrive at any contrary conclusion.'" *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d

1255, 1261 (Fed. Cir. 2103) (quoting *Dresser-Rand Co. v. Virtual Automation, Inc.*, 361 F.3d 831, 838 (5th Cir. 2004)).

III. Applicable law regarding damages.

Upon a showing of infringement, a patentee is entitled to an award of damages "adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." 35 U.S.C. § 284. However, "[t]he burden of proving damages falls on the patentee." *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009).

There are two alternative categories of damages typically recovered in a patent case: the patentee's lost profits; or the "reasonable royalty [the patentee] would have received through arms-length bargaining." *Id.* In this case, Plaintiff sought to recover only the second category of damages, a reasonable royalty.

To determine an appropriate reasonable royalty, patentees (and courts) commonly employ the hypothetical negotiation, or "willing licensor-willing licensee" model. *Id*. at 1324-25. The hypothetical negotiation "attempts to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began," assuming that the patent is valid, enforceable, and infringed. *Id.*; *see also Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 n.13 (Fed. Cir. 1995) (*en banc*). Such a reasonable royalty analysis "necessarily involves an element of approximation and uncertainty." *Unisplay, S.A. v. Am. Elec. Sign Co.*, 69 F.3d 512, 517 (Fed. Cir. 1995). However, the Court must ensure that a jury's damages award is supported by substantial evidence. *Id.*

IV. Substantial evidence supports the jury's verdict.

During trial, SimpleAir presented two explicit damages theories to the jury through the testimony of its expert, Mr. Robert Mills. The first theory (hereafter the "settlement analysis") was based on SimpleAir's past settlement agreements, with particular emphasis given to the license agreements with Microsoft and Apple. The second theory (hereafter the "*Georgia-Pacific* analysis") applies the factors enumerated in *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), in order to construct a hypothetical negotiation and corresponding reasonable royalty.

Having reviewed the parties' briefing and the entire record, the Court is persuaded that SimpleAir introduced substantial evidence under both the settlement and *Georgia-Pacific* analyses—evidence that is more than adequate to support the jury's verdict.

A. Plaintiff's settlement analysis and its reliance on the Microsoft license support the jury's verdict.

Applying his settlement analysis, Mr. Mills told the jury that Google should pay a royalty of nearly $127[1] million in compensation for its infringement of the '914 Patent. *See* Dkt. No. 712, at 14:5-8. To arrive at that figure, Mr. Mills:

- took the $5 million he calculated as Microsoft's payment for use of the technology claimed in the '914 patent;
- multiplied it by a factor of 40 (to account for the fact that the accused Google messaging services receive significantly more messages that the licensed Microsoft services); and

[1] As discussed in more detail below, Mr. Mills performed an alternative reasonable royalty calculation using the *Georgia-Pacific* framework. Applying that analysis, he opined that the appropriate reasonable royalty would be $146 million. Hereafter the $127 million figure is used in connection with Google's challenge to the settlement analysis, and the $146 million figure is used in connection with Google's challenge to the *Georgia-Pacific* analysis.

- applied certain other adjustment to arrive at a reasonable royalty of $127 Million. Dkt. No. 712 at 11:4-14:8; Dkt No. 714 at 7:1-12.

At trial, Google disputed the comparability of the Microsoft license, and presented competing testimony from its expert that analyzed SimpleAir's licenses with Yahoo! and Facebook. Dkt. No. 717 at 22:17-25:5. In fact, both parties' experts and attorneys went back and forth during the trial with respect to which "neighborhood" of licenses Google belonged to. *See, e.g.*, Dkt. No. 717 at 37:17-47:19. After hearing both parties' arguments, and carefully deliberating, the jury awarded SimpleAir $85 million in damages—essentially coming out somewhere between the parties' competing "neighborhoods."

Google now asks the Court to Grant its motion for JMOL, arguing that Mr. Mills' reliance on the Microsoft license was improper as a matter of law, because he used it (and the Apple license, discussed below) to "inflate" his reasonable royalty analysis, while ignoring other licenses that Google claims are "comparable." Dkt No. 748 at 9-11. Google cites two cases in support of its argument: *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 872-73 (Fed. Cir. 2010), and *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 80-81 (Fed. Cir. 2012). In addition to this general attack on Mr. Mills' reliance on the Microsoft license, Google also argues that SimpleAir's damages model attempts to recover for foreign infringement and/or is insufficiently tied to specific instances of Google's infringement in the United States. For the reasons stated below, the Court is not persuaded by Google's arguments.

1. Google relies on inapposite case law.

As stated above, Google's motion relies on *ResQNet* and *LaserDynamics*. However, neither of these cases square with the facts and circumstances at issue here. In *ResQNet*, the Federal Circuit concluded that the plaintiff's damages expert impermissibly "inflated" his

damages calculations by considering licenses that had no connection to the claimed invention. 594 F.3d at 870, 871 ("Notably, none of these licenses even mentioned the patents in suit or showed any other discernible link to the claimed technology"). Likewise in *LaserDynamics*, the Federal Circuit rejected the plaintiff's damages calculation because its expert relied on patent licensing programs that did not involve the patent in suit, while ignoring the "many licenses expressly for the [patent in suit]." 694 F.3d. at 80.

Mr. Mills' analysis is fundamentally different from those which the Federal Circuit rejected in *ResQNet* and *LaserDynamics*. For instance, this is simply not a case where "none of these licenses even mentioned the patents in suit." *ResQNet*, 594 F.3d at 870, 871. To the contrary, it is undisputed that all of the licenses considered by the Mr. Mills—including the Microsoft license—expressly cover the '914 patent. *See* Dkt. No. 717 at 17:1-13 (Google's expert, Dr. Ugone, summarizing the license agreements covering the '914 patent[2]).

In this case, Mr. Mills analyzed the universe of potentially relevant licenses, and distinguished the settlement agreements he relied upon (those with providers of infringing notification services (including Microsoft)) from those agreements he determined to be irrelevant to the hypothetical negotiation between SimpleAir and Google (those with "content providers" (e.g., Yahoo! and Facebook)). *See* Dkt. No. 712 at 2:15-14:8; Dkt. No. 714 at 5:2-14. Google disagreed, and its expert and attorneys urged the jury to place Google within a different "neighborhood" of licenses. Dkt. No. 717 at 22:17-33:15. However, even Google's damages expert admitted that the relevant Apple and Microsoft services were similar in certain crucial respects to Google's infringing messaging services. *See* Dkt. No. 717 at 44:18-47:19.

[2]In fact, only Dr. Ugone considered agreements that did not involve the '914 patent. Dkt. No. 717 at 59:20-61:13.

Having reviewed then entire record, the Court is persuaded that Mr. Mills' testimony was adequate to "tie proof of damages to the claimed invention's footprint in the market place" and support the jury's verdict. *ResQNet.com*, 594 F.3d at 869. Contrary to Google's assertions, the fact that the jury's award came out closer to Plaintiff's proposed "neighborhood" than to the Defendant's does not invalidate the verdict. Confronted with the parties' contradictory expert testimony, "the jury was free to 'make credibility determinations and believe the witness it considers more trustworthy.'" *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1362 (Fed. Cir. 2012) (citing *Streber v. Hunter*, 221 F.3d 701, 726 (5th Cir. 2000)); *see also VirnetX, Inc. v. Cisco Sys.*, 767 F.3d 1308, 1331 (Fed. Cir. 2014) (citing *i4i*, 598 F.3d at 856). Further, "[t]he jury was entitled to choose a damages award within the amounts advocated by the opposing parties." *Powell*, 663 F.3d at 1241 (internal citation omitted). The jury performed its duty, and rendered a verdict that is supported by substantial evidence.

2. SimpleAir's damages model does not attempt to recover for foreign infringement.

Google further attacks Mr. Mills' testimony by complaining about his use of worldwide figures for Google and Microsoft's respective use of messaging services. Google argues that SimpleAir is attempting to exact damages for foreign infringement of the '914 Patent. Dkt. No. 748 at 5-9 (citing *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348 (Fed. Cir. 2013)). The Court disagrees.

SimpleAir responds that Mr. Mills did not have U.S. only figures for the number of notifications sent by Google and Microsoft's infringing services—either because. Dkt. No. 712 at 9:11-10:7; Dkt. No. 714 at 9:13-17. Mr. Mills' (unrebutted) position is that Google's U.S. only figures either do not exist or Google did not produce them. *Id.* Accordingly, he used the global

numbers in order to make an "apples-to-apples" comparison of the two companies' respective use of the infringing services. Dkt. No. 756 at 10. Further, Mr. Mills used this comparative worldwide use to estimate comparative domestic use between an infringer (Google) and a licensee (Microsoft).

Google's attack on Mr. Mills' testimony is based on a faulty premise: that an infringer's use cannot be reliably compared to a licensee's use unless the plaintiff obtains precise figures for each entity's use of the claimed technology solely within the United States. Such is not the case. "A reasonable royalty analysis 'necessarily involves an element of approximation and uncertainty.'" *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1336 (Fed. Cir. 2009) (citing Unisplay, 69 F.3d at 517.). Moreover, an expert may properly estimate the extent of infringing use in the United States where, as here, the actual data is unavailable. *See i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 855-56 (Fed. Cir. 2010).

In today's global marketplace, the ability to obtain domestic-only data is an increasing rarity. Although Google purported to identify the components of the infringing messaging system that are used to process and deliver messages, in many instances the location of one or more component is simply listed as "unknown." *See* Defendant's Exhibit ("DX") 40. Such gaps in the data make it impossible to establish Google's precise domestic use. *Id.* Accordingly, SimpleAir's expert, Mr. Mills, turned to the information regarding Google and Microsoft's global use of the infringing messaging services, in order to estimate domestic infringement.

This is fundamentally distinguishable from the damages model that the Federal Circuit rejected in *Power Integrations.* 711 F.3d. 1348. In that case, the plaintiff sought damages for worldwide sales on the theory "it was foreseeable that [the defendants'] infringement in the United States would cause [the plaintiff] to lose sales in foreign markets." *Id.* at 1371. The Federal

Circuit rejected that argument, holding that the plaintiff could not recover damages for "injury caused by infringing activity that occurred outside the territory of the United States." *Id.* Here, SimpleAir is not attempting to recover for extra-territorial infringement, but merely to use Google and Microsoft's global figures as a benchmark from which to estimate those companies' comparative use in the United States. The Federal Circuit has long recognized that such estimation is permissible (and in some cases required). *See i4i*, 598 F.3d at 855-56 (damages expert used a survey to "estimate the amount of infringing use"); *Lucent*, 580 F.3d at 1325 (Fed. Cir. 2009); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1315 (Fed. Cir. 2014) ("This court has also recognized that estimating a 'reasonable royalty' is not an exact science."). *Power Integrations* is therefore inapposite, and Google's attack on Mr. Mills' testimony should not succeed.

3. Mr. Mills' damages model is sufficiently tied to Google's infringement within the United States.

Google further complains about Mr. Mills' reliance on global figures as unreliable. *See e.g.*, Dkt. No. 758 at 3. However, both parties' experts testified that worldwide figures can be used to estimate two companies' comparative infringement within the United States. Dkt. No. 712 at 9:20-10:7; Dkt. No. 717 at 56:19-57:2. Specifically, Google's expert, Dr. Ugone, admitted the following:

> Q. Well, when you calculated [the] extent of use for Facebook and did an adjustment for Google, you did it based upon worldwide notifications, right?
>
> A. The -- the data we had for the percent that was Facebook, yes, I will agree with that.
>
> Q: And you believe it's useful and reliable to use worldwide notifications to make an adjustment for extent of use, right?
>
> A: Within the framework that I'm using, yes.

Dkt. No. 717 at 57:5-9.

Mr. Mills, used the same "useful and reliable" tools to compare Google and Microsoft's global use of the infringing messaging services, and from those figures, he developed an estimate of the companies' comparative domestic infringement. He then specifically informed the jury that he was using such worldwide numbers, and explained why and how he was using the same to estimate infringement within the United States. Dkt. No. 711 at 56:1-15; Dkt. No. 712 at 9:3-10:10. It is significant that Google offered no evidence showing that the global figures Mr. Mills relied upon were unreasonable or inconsistent with the companies' comparative domestic infringement.

Having considered the consensus of both experts that global figures are generally "useful and reliable," and in the absence of any rebuttal from Google showing that Mr. Mills' methodology was improperly applied to the specific comparison between Google and Microsoft, the Court is persuaded that Google's post-verdict attack on SimpleAir's Microsoft license theory misses the mark. Fundamentally, Google's arguments are nothing more than an attack on the weight of the evidence. As such, Google's effort is materially flawed because the Court must draw all reasonable inferences in favor of the nonmoving party, and may not make credibility determinations or weigh the evidence. *Reeves*, 530 U.S. at 150-51 (2000).

4. Google's use of selective and fragmented quotations from the record further undermines its argument and weakens its credibility before the Court.

Google quotes the following colloquy from the cross examination of Mr. Mills in support of its argument that "Mr. Mills expressly disregarded comparable licensing agreements for the '914 Patent":

> Q: And even though the first Georgia-Pacific factor says to look at the license agreements, you rely on only one agreement in calculating your royalty?

> A. Well, if [by] rely upon you mean I've only been able to adjust one of those agreements to reflect the value for Google, then that's correct.

Dkt. No. 748 at 9 (citing Dkt. No. 714 at 5:5-11). However, Google's quotation omits the final sentence in Mr. Mills' answer; the complete exchange reads:

> Q: And even though the first Georgia-Pacific factor says to look at the license agreements, you rely on only one agreement in calculating your royalty?
>
> A: Well, if [by] rely upon you mean I've only been able to adjust one of those agreements to reflect the value for Google, then that's correct. **But I have considered all of those agreements in my analysis**.

Dkt. No. 714 at 5:10-11 (emphasis added to indicate omitted testimony).

Google's statement that "Mr. Mills expressly disregarded comparable licensing agreements," combined with the selectively edited quotation, inaccurately communicates that Mr. Mills omitted the other license agreements from his analysis. This is clearly not the case. The Court does not assume this to be an intentional effort to mislead; nevertheless, it is a serious error that bears correcting. It is certainly one that should have been caught by Google's counsel prior to filing their motion. Errors of this particular nature, even if unintentional, unavoidably lessen the overall credibility of the offending advocate before the Court. For future guidance to both of the parties and their lawyers: ***incomplete quotations should be used with the utmost care, or better yet, not used at all***.

B. The Apple license likewise supports SimpleAir's settlement analysis and the jury's verdict.

Mr. Mills also relied on SimpleAir's agreement with Apple to support his settlement analysis. *See* Plaintiff's Exhibit ("PX") 181 (the Apple license). Much of this testimony related to the parties' dispute about the appropriate "neighborhood" of licenses that the jury should have considered in order to determine a reasonable royalty for Google's infringement. *See, e.g.,* Dkt.

No. 712 at 3:20-8:4; Dkt No. 714 at 37:17-47:19, 56:19-59:19. For the same reasons discussed above, the Court is not persuaded that SimpleAir selected the Apple license simply in order to "inflate" its damages calculations. To the contrary, both parties' experts presented their opinions as to which agreements would have been germane to the hypothetical negotiation between the parties. Confronted with such competing testimony, the jury was free to consider the credibility of the witnesses, weigh the competing evidence, determine who had persuaded them, and then award damages accordingly. *Powell*, 663 F.3d at 1241; *Kinetic Concepts*, 688 F.3d at 1362; *VirnetX*, 767 F.3d at 1331.

C. Mr. Mills' *Georgia-Pacific* analysis supports the jury's verdict.

Mr. Mills' second damages analysis was based on the analytical framework set out in *Georgia-Pacific Corp. v. United Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970) 318 F. Supp. 1116. That case sets out fifteen non-exclusive and largely overlapping factors that frame the reasonable royalty inquiry. *See LaserDynamics*, 694 F.3d at 60, n.2. During trial, Mr. Mills walked the jury through his application of the *Georgia-Pacific* framework, and concluded that a hypothetical negotiation based on said framework would have resulted in Google paying a lump sum royalty of $146 million.[3] Dkt. No. 711 at 141:24-165:8. Dr. Ugone performed a competing *Georgia-Pacific* analysis, and testified that the resulting royalty would not exceed $6 million. Dkt. No. 717 at 2:18-3:1. The jury ultimately awarded $85 million in damages. Dkt. No. 718.

Google first attacks the jury's damages award of $85 million as "so outrageously high . . . as to be unsupportable as an estimation of a reasonable royalty." Dkt. No. 748 at 5 (citing *Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1241 (Fed. Cir. 2011)). Google further argues that Mr.

[3]As discussed above, Mr. Mills testified that a reasonable royalty would be $146 million under the *Georgia-Pacific* analysis. He calculated a lower royalty ($127 million) when applying the settlement analysis. The jury's award of $85 million is well below either of these figures.

Mills' analysis fails in four additional respects: (1) it is unrelated to Google's actual infringement; (2) it is not based on the smallest saleable unit; (3) it fails to account for non-infringing alternatives; and, (4) it fails to show how the *Georgia-Pacific* factors impact the hypothetical negotiation. Each of Google's arguments lacks merit.

1. The jury's award lies within the range of damages encompassed by the record as a whole.

At trial, each party presented its reasonable royalty calculation to the jury. Mr. Mills testified that the appropriate royalty would be $146 million; Dr. Ugone testified that the appropriate royalty would not exceed $6 million. Dkt. No. 711 at 141:24-165:8 (Mills); Dkt. No. 717 at 2:18-33:14 (Ugone). Ultimately, the jury awarded SimpleAir a lump-sum reasonable royalty that was well within the competing amounts advocated by the opposing parties—as it was entitled to do. *See Powell*, 663 F.3d at 1241 (internal citations omitted). Contrary to Google's arguments, the award is not "so outrageously high . . . as to be unsupportable as an estimation of a reasonable royalty." *Rite-Hite*, 56 F.3d at 1554. Rather, it is clearly "within the range encompassed by the record as a whole." *Unisplay, S.A. v. Am. Elec. Sign Co.*, 69 F.3d 512, 519 (Fed. Cir. 1995).

2. SimpleAir's royalty base rests on actual use of the patented method.

Google's further attacks Mr. Mills' *Georgia-Pacific* analysis, alleging that it "calculates damages based on the basis that each [Android] device is '***capable***' of infringing the '914 patent." Dkt. No. 748 at 13 (emphasis in original). According to Google, Mr. Mills' calculation therefore "fails to provide a 'legally sufficient basis' for the [jury's] damages award." Dkt. No. 748 at 13 (citing *i4i*, 598 F.3d at 841; *Powell*, 663 F.3d at 1241; and *Cardiac Pacemakers*, 576 F.3d a5 1359-59).

This argument is wrong on the facts, and it misunderstands the law. With respect to the former, Google relies upon what the entire record shows to be brief, out-of-context statements from Mr. Mills' testimony to support its arguments. Specifically, Google cites Mr. Mills' testimony that: "the base is U.S. sales of Android smartphones that are capable of using the service." Dkt. No. 711 at 161:4-5. However, Google ignores the fact that Mr. Mills previously limited his damages calculations to add no value for users who do not use the infringing system. *See* Dkt. No. 711 at 85:18-106:11; 134:15-135:25; 152:3-153:8. Mr. Mills explained his process in testimony that immediately follows the very excerpts Google upon which relies.

> Q. And why did you consider all of the phones, even though some people don't really care about notifications or use the service?
>
> A. Because if you recall a few moments ago, I applied that to get an average revenue per phone and an average profit for phone. So this analysis already has built into it the understanding that some people either don't value notifications or don't value them enough to be willing to pay that much for them.
>
> Q. So when you decided to use the 193 million phones, you considered the fact that notifications aren't important to some people at all?
>
> A. Yes.

Dkt. No. 711 at 162:9-25.

Further, Google misunderstands the law by arguing that the damages analysis must be directly tied to the specific instances of actual infringing use. It is true that SimpleAir "can only receive infringement damages on those devices that actually performed the patented method during the relevant infringement period." *Cardiac Pacemakers*, 576 F.3d at 1359. However, the Federal Circuit has also unequivocally stated that the quantum of that infringement may be established using: "[u]sage (or similar) data [that] may provide information that the parties would

frequently have ***estimated*** during the negotiation." *Lucent*, 580 F.3d at 1334 (emphasis added). The Federal Circuit further clarified that:

> Such data might, depending on the case, come from sales projections based on past sales, consumer surveys, focus group testing, and other sources. Even though parties to a license negotiation will usually not have precise data about future usage, they often have rough estimates as to the expected frequency of use.

and:

> On the other hand***, we have never laid down any rigid requirement that damages in all circumstances be limited to specific instances of infringement proven with direct evidence.*** Such a strict requirement could create a hypothetical negotiation far-removed from what parties regularly do during real-world licensing negotiations. As shown by the evidence in this case, companies in the high-tech computer industry often strike licensing deals in which the amount paid for a particular technology is not necessarily limited to the number of times a patented feature is used by a consumer. A company licensing a patented method often has strong reasons not to tie the royalty amount strictly to usage. The administrative cost of monitoring usage can be prohibitively expensive.

Lucent, 580 F.3d at 1334 (emphasis added).

In other words, while damages may only be awarded for actual infringement of the patented method, the ***hypothetical*** negotiation and the resulting royalty may be informed by estimates of the quantum of that actual infringement. *Id.* As the Federal Circuit has observed, parties in the real world—and especially in high-tech industries—frequently assign a royalty rate to every unit of a device sold, despite the fact that consumers may not use the patented feature in every instance. *Id.* In this case, Mr. Mills reduced his royalty calculations to account for the amount of actual infringement, *see* Dkt. No. at 85:18-106:11; 134:15-135:25; 152:3-153:8, and then assigned that rate to the universe of potentially infringing products. *Id.* at 161:4-162:25. Not only is this procedure permissible under *Lucent*, it mirrors the real-world negotiations recognized by the Federal Circuit. *Id.*

3. Google's entire market value rule arguments are inapposite.

The entire market value rule applies when a plaintiff seeks to apply a certain royalty rate to the total revenue generated by an infringing product, despite the fact that the patent-in-suit covers only certain elements or components of that product. *See Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1336 (Fed. Cir. 2009) (the entire market value rule must be satisfied when "applying a royalty percentage to a total sales figure of the infringing software products"). In such cases, the plaintiff can seek damages based on total revenue only if "it can be shown that the patented feature drives the demand for an entire multi-component product." *LaserDynamics*, 694 F.3d at 67. Otherwise, the plaintiff may seek damages based only on the revenue of the smallest saleable patent-practicing unit.

However, the entire market value rule argument applies only where the expert seeks to apply a royalty percentage (e.g., 5%) to the revenues generated by an entire product (*e.g.*, the Android smartphones or the "hypothetical app" that Google's counsel creates as a framework for describing Mr. Mills' theory). This is not what SimpleAir's experts (Mr. Mills and Dr. Srinivasan) did. To the contrary, SimpleAir's experts conducted a detailed analysis of the incremental value Google generates through the use of the method claimed in the '914 patent to enable notification for all apps on Android devices. Dr. Srinivasan relied on the price of smartphones (the product that is charged for) as one of the factors he used to determine the incremental value of the said infringing notification service (a product that is not charged for). Mr. Mills then used the incremental value of the claimed technology—or its "footprint in the marketplace"—as part of his *Georgia-Pacific* analysis; not only is such an analysis permissible, it is the antithesis of the entire market value rule.

Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1317 (Fed. Cir. 2011) (citing *ResQNet*, 594 F.3d at 869).[4]

4. Mr. Mills' *Georgia-Pacific* analysis is tied to the hypothetical negotiation between SimpleAir and Google.

In its original motion, Google further contends that that Mr. Mills' analysis "fails to tie the *Georgia-Pacific* factors to a hypothetical negotiation that would have taken place between the parties." Dkt. No. 748 at 18. Google's argument is conclusory[5] and it is not compelling.[6] During the trial Mr. Mills specifically and methodically took the jury through his application of the *Georgia-Pacific* factors and their application to his calculations. *See* Dkt. No. 711 at 141:24-165:8.

D. Google's proposed non-infringing alternative does not cap damages.

At trial, Google presented evidence that it could avoid infringing the '914 patent by redirecting traffic over the infringing messaging services to at least one server located outside of the United States. *See* Dkt. 711 at 72:2-76:5; Dkt No. 713 at 58:4-59:12. Google's expert further testified that the cost of implementing this non-infringing alternative would have been approximately $4.8 million. Dkt. No. 717 at 27:12-20. Based on this testimony, Google argues that Mr. Mills' damages calculations are "divorced of all relation to a potential non-infringing

[4] In a footnote in its reply, Google also argues that SimpleAir failed to introduce sufficient evidence that Google generates any revenue from products for which it does not charge (*e.g.*, the Android operating system), and that SimpleAir failed to establish any nexus between the infringing services and the revenue Google receives. Dkt. No. 758 at n.7. The first argument is clearly wrong, as uncontroverted evidence presented by Mr. Mills and Google's own witnesses establishes that Google generates significant revenue from many products and services, despite not charging directly for such services. *See* Dkt. No. 711 at 146:3-149:10; Dkt. No. 714 at 566:21-70:1; Plaintiff's Exhibit 49. SimpleAir likewise introduced substantial evidence showing that the nexus between the infringing services and such revenue. *See, e.g.*, Dkt. No. 711 at 149:20-150:12.

[5] The only binding authority cited by Google is the portion of the Federal Circuit's opinion in *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1312 (Fed. Cir. 2011), rejecting the 25% "rule-of-thumb." Contrary to the argument from Google's lawyers, there is no indication that any such "rule-of-thumb" was applied as any part of Mr. Mills' analysis.

[6] It is also a procedurally improper attempt to argue a *Daubert* challenge under Rule 50. *See Versata*, 717 F.3d at 1264.

alternative," and therefore fail to provide a legally sufficient evidentiary basis for the jury's award. Dkt. No. 748 at 17 (citing *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1312 (Fed. Cir. 2002).

In other words, Google asserts that Mr. Mills' analysis is not properly tied to the facts of this case. Such an argument "should be resolved under the framework of the Federal Rules of Evidence and through a challenge under *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579." *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1284 (Fed. Cir. 2013). Google failed to raise this issue in its *Daubert* motions, and has therefore waived it. *Id.*

However, even if Google had not waived, its argument falls short on the merits. To the extent Google's argument that Mr. Mills' calculation and/or the jury's damages award is "outrageously high" is an attempt to cap damages at the cost of implementing its non-infringing alternative; that argument fails as a matter of law. *Mars, Inc. v. Coin Accepters, Inc.*, 527 F.3d 1359, 1373 (Fed. Cir. 2008) ("[Defendant] is wrong as a matter of law to claim that reasonable royalty damages are capped at the cost of implementing the cheapest available, acceptable, noninfringing alternative . . . To the contrary, an infringer may be liable for damages, including reasonable royalty damages, that exceed the amount that the infringer could have paid to avoid infringement.").

SimpleAir presented substantial evidence that re-routing traffic to foreign servers would not have been the best—or even an acceptable—alternative to infringement. Specifically, SimpleAir presented substantial evidence that Google's best non-infringing alternative would not have been to move its servers or re-route traffic, but to provide notifications through a persistent connection between the notification app and its corresponding application server. Dkt. 711 at 57:15-64:3

(Dr. Knox). Dr. Srinivasan and Mr. Mills then expressly considered this alternative in their analyses. *Id.* at 94:7-20, 104:15-105:8 (Dr. Srinivasan); 151:14-159:2 (Mr. Mills).

SimpleAir also presented substantial evidence that Google's proposed alternative would merely substitute its exposure under the '914 Patent for exposure under another SimpleAir patent, the '279 Patent. *See* Dkt. No. 711 at 65:9-66:23. Google argues that it is improper for SimpleAir to rely on the '279 patent because it issued well after the date of the hypothetical negation, and that SimpleAir failed to introduce evidence that Google infringes the '279 Patent (or would infringe under its proposed alternative). The first argument fails as a matter of law. *See Lucent*, 580 F.3d at 1333 (quoting *Sinclair Refining Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689, 698 (1933)). The second argument is inapposite. SimpleAir introduced expert testimony demonstrating that the proposed alternative would expose Google to a significant risk of liability under the '279 Patent. *See* Dkt. No. 711 at 65:9-66:23. Drawing all reasonable inferences in favor of the non-moving party, that is all that is required to show that Google's proposed alternative was unacceptable, and therefor to support the jury's verdict. *See Spectralytics, Inc. v. Cordis Corp.*, 649 F.3d 1336, 1346 (Fed. Cir. 2011) ("We agree with the district court that a reasonable jury could have found that the alleged alternatives were either not acceptable or not available, and that such a finding was supported by substantial evidence."). This Court need not, and does not, decide whether such evidence would be sufficient to prove infringement of the '279 Patent.

Determining the weight to be given to proposed noninfringing alternatives is "a task for the jury, and a reasonable jury could have chosen to give very little weight to this evidence." *Spectralytics*, 649 F.3d at 1346. After considering this evidence, the jury was entitled to choose a damages award within the amounts advocated by the opposing parties. *Powell*, 663 F.3d at 1241.

The jury did just that, awarding SimpleAir $85 million in damages—a figure that is between the $4.8-$6 million advocated by Google, and the $127-$146 million advocated by SimpleAir. Having reviewed the entire record, the Court is persuaded that substantial evidence supports that award.

V. Google's renewed *Daubert* challenges are not properly before the Court.

As the Court noted above, many of the arguments raised in Google's motion for JMOL merely re-urge Google's *Daubert* challenges. As the Federal Circuit recently explained, this is improper:

> Under the guise of sufficiency of the evidence, [Defendant] questions the admissibility of [Plaintiff's] expert testimony and whether his damages model is properly tied to the facts of the case. Such questions should be resolved under the framework of the Federal Rules of Evidence and through a challenge under *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993).
>
> . . .
>
> Whether evidence is inadmissible is a question clearly within the scope of the rules of evidence and *Daubert*. However, [Defendant] has not appealed a *Daubert* ruling. Instead, it argues that the jury could have not had sufficient evidence to award lost profits because the expert's testimony was fatally flawed and should not have been admitted. This is the improper context for deciding questions that, by [Defendant]'s own admissions, boil down to the admissibility of evidence.

Versata, 717 F.3d at1264 (internal citations omitted).

Like the defendant in *Versata*, Google argues that SimpleAir's expert testimony was fatally flawed and should not have been admitted, *see, e.g.*, Dkt. No. 748 at 18-34. However, Google also expressly admits that these questions "boil down to the admissibility of evidence." *Id.*; Dkt. No. 748 at 18 ("Google renews its objection that the testimony of Plaintiff's damages expert, Dr. Seenu Srinivasan, should have been excluded or stricken under Federal Rule of Evidence 702 and *Daubert*."); Dkt. No. 748 at 22 ("Google renews its objection that the testimony of Plaintiff's

damages expert, Mr. Robert Mills, should have been excluded or stricken under Federal Rule of Evidence 702 and *Daubert*."). These arguments are improper in a Rule 50 motion for JMOL, and the Court declines to consider them.[7]

VI. Conclusion.

For all the reasons stated herein, Google's Renewed Motion for Judgment as a Matter of Law (Dkt. No. 748) is **DENIED** in its entirety.

[7]Contrary to Google's argument, nothing in *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 242 (1993) requires the Court to re-hear *Daubert* challenges at the JMOL stage. Under Rule 50, Google may challenge the sufficiency of the evidence, including expert testimony, supporting the jury's verdict; it has done so in several portions of its motion. However, Rule 50 does not allow Google to re-argue the admission of that evidence, as it is expressly seeking to do in Sections II and III of its motion.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CASE NO. 2:11-CV-416-JRG
	§	
GOOGLE INC.	§	
	§	
Defendant.	§	
	§	

ORDER

Plaintiff SimpleAir, Inc. ("SimpleAir") filed this patent infringement action against Google on September 15, 2011. At trial, SimpleAir alleged that the operation of Google's Cloud Messenger (GCM) and Cloud to Device Messenger (C2DM) (collectively the "Accused Services") infringe independent claim 1, and dependent claims 2, 3, 7, and 22 (the "asserted claims") of U.S. Patent No. 7,035,914 (the "'914 Patent"). A jury trial commenced on January 13, 2014. On January 18, 2014, the jury reached and returned its unanimous verdict, finding that the Accused Services infringed each of the asserted claims, and that the asserted claims were not invalid. Dkt. No. 601.

However, the same jury was unable to reach a unanimous verdict with respect to the amount of damages. Accordingly, the Court entered judgment with respect to the separate issues of validity and infringement, and ordered a new trial on damages to be set for March 17, 2014. Dkt. No. 634; 635. A new jury was seated and a trial concerning damages only began on March 17, 2014. On March 19, 2014, that jury returned a unanimous verdict awarding $85 million in damages to SimpleAir. Dkt. No. 718.

Following the respective trials on the issues of liability (infringement and validity) and damages, Google moved for judgment as a matter of law (JMOL), arguing: (1) that it did not infringe the '914 Patent; (2) that the '914 patent was invalid; and (3) that the jury's damages award was not supported by substantial evidence. *See* Google's motions for JMOL (Dkt. Nos. 636, 637 and 748). After careful review of the parties' arguments and the record, the Court determined that the jury verdicts with respect to both liability and damages were supported by substantial evidence, and denied Google's motions for JMOL. *See* Dkt. No. 764 (liability); Dkt. No. 765 (damages).

In the motions presently before the Court (Dkt. No. 649 and Dkt. No. 749), Google asks the Court to set aside the juries' verdicts with respect to both liability and damages and grant a new trial on all issues. Federal Rule of Civil Procedure 59(a) provides that a trial court may grant such relief, on motion from a party, "for any reason for which a new trial has heretofore been granted in an action at law in federal court." Generally, such motions are granted if the jury's verdict is against the great weight of the evidence, or if prejudicial error occurred during the course of the trial. *See Shows v. Jamison Bedding, Inc.*, 671 F.2d 927, 930 (5th Cir.1982); *Smith v. Transworld Drilling Co.*, 773 F.2d 610, 612–13 (5th Cir.1985). "The decision to grant or deny a motion for a new trial is generally within the sound discretion of the trial court." *Shows*, 671 F.2d at 930.

In support of its motions under Rule 59(a), Google argues that:

- the Seventh Amendment requires a new, combined trial on all issues (*i.e.*, infringement, validity, and damages) (Dkt. No. 649 at 11);
- the jury verdicts in this case—both with respect to liability and damages—are against the great weight of the evidence (Dkt. No. 649 at 7-11; Dkt. 749 at 6-11);
- the Court erred in excluding certain evidence and or allowing other evidence to be presented to the jury (Dkt. No. 649 at 13; Dkt. No. 749 at 12.

Having reviewed the parties' arguments and the entire record, the Court does not find Google's arguments to be persuasive.

Following the first trial in this case, Google moved for a new, combined trial—raising the same Seventh Amendment concerns that are reiterated in the current motion. Dkt. No. 628. The Court considered and denied Google's motion in an order that issued on February 10, 2014. *See* Dkt. No. 634. Accordingly, Google's first argument is properly considered a motion for reconsideration. However, Google has failed to show any of the conditions necessary to justify such a reconsideration: (1) an intervening change in the law; (2) the availability of new evidence; or (3) the need to correct a clear error of law or prevent manifest injustice. *See Benjamin Moore & Co. v. Borden*, 318 F.3d 626, 629 (5th Cir. 2002).

Google's remaining arguments either (a) reiterate arguments raised in Google's motions for JMOL[1], or (b) challenge the Court's evidentiary rulings. As discussed at length in the Court's prior orders, the jury verdicts with respect to liability and damages are supported by substantial evidence. *See* Dkt. No. 764; Dkt. No. 765. Having reviewed the parties' briefing and the record, the Court is not convinced that the same verdicts are against that great weight of the evidence, such that a new trial is warranted. The Court is similarly not persuaded that its evidentiary rulings were in error, or caused any unfair prejudice to Google.

Accordingly, Google's Motions for a new trial under Rule 59(a) (Dkt. No. 649 and Dkt. No. 749) are **DENIED** in their entirety. The Court further **ORDERS** that all other pending motions in this case are **DENIED**, and the Clerk of the Court is directed to terminate the same.

[1]*See, e.g.*, Dkt. No. 649 at 7 ("The jury's verdict of infringement of the '914 Patent by Google is against the great weight of the evidence, as discussed in Google's Renewed Motion for Judgment as a Matter of Law Regarding Infringement . . . which is hereby incorporated by reference."); Dkt. No. 749 at 6 ("The jury's damages verdict of $85 million is against the great weight of the evidence, as discussed in Google's Renewed Motion for Judgment as a Matter of Law Regarding Damages . . . which is hereby incorporated by reference.").

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SIMPLEAIR, INC.,	§	
	§	
Plaintiff,	§	
	§	CIVIL ACTION NO. 2:11-cv-416-JRG
v.	§	CIVIL ACTION NO. 2:13-cv-587-JRG
	§	
GOOGLE INC.,	§	
	§	
Defendant.	§	

JUDGMENT AS TO DAMAGES

A jury trial commenced in this case on January 13, 2014, and the jury reached and returned its verdict on January 18, 2014 (Dkt. No. 601). The jury reached a verdict unanimously finding infringement and no invalidity, but the jury could not return a unanimous finding on the amount of damages. Pursuant to Rule 58 of the Federal Rules of Civil Procedure and in accordance with the jury's verdict and the entirety of the record available to the Court, the Court entered judgment as to infringement and validity on February 10, 2014 (Dkt. No. 635), and ordered a new trial on the issue of damages.

A second jury trial commenced on March 17, 2014, to determine the amount of damages in this case. The jury reached and returned its unanimous verdict on March 19, 2014 (Dkt. No. 718). Therefore, pursuant to Rule 58 of the Federal Rules of Civil procedure and in accordance with the jury's verdict and the entirety of the record available to the Court, the Court hereby **ORDERS AND ENTERS FINAL JUDGMENT AS TO DAMAGES** as follows:

1. The jury having awarded Plaintiff SimpleAir, Inc. ("SimpleAir") the lump sum of eighty five million dollars ($85,000,000) as a reasonable royalty: it is **ORDERED** that SimpleAir recover from Defendant Google Inc. ("Google") the sum of eighty five million dollars ($85,000,000)

as damages in the form of a reasonable royalty for Google's infringement of U.S. Patent No. 7,035,914 ("the '914 patent").

2. Pursuant to 35 U.S.C. § 284, the Court awards SimpleAir pre-judgment interest, payable by Google.[1] The Court previously ordered the parties to submit a calculation of pre-judgment interest (Dkt. No. 738), computed according to the following formula:

> $85,000,000.00 at the prime rate as published in the Money Rate section of the Wall Street Journal, compounded annually, adjusting the effective rate with each and every change in said prime rate over the calculation period—from date of infringement through the present—with an additional per diem factor/amount shown; said per diem amount to be applied for each additional day after the stated ending date of the calculation until judgment is actually entered.

Consistent with said calculation (Dkt. No. 739), the Court **ORDERS** that SimpleAir shall recover prejudgment interest from Google in the amount of $11,583,526.00 for the period of time extending from May 1, 2010 through April 29, 2014. The Court further **ORDERS** that SimpleAir shall recover from Google the amount of $8,600 *per diem* from April 30, 2014 through the date of entry of this Judgment.

3. Pursuant to 28 U.S.C. § 1961(a), the Court **ORDERS** that SimpleAir recover from Google post-judgment interest payable at the statutory rate.

4. Pursuant to Federal Rule of Civil Procedure 54(d) and 28 U.S.C. § 1920, the Court further finds that SimpleAir is the prevailing party in this matter and is entitled to costs consistent therewith. Accordingly, the Court **ORDERS** that SimpleAir recover its costs of suit from Google.

[1] An award of pre-judgment interest serves to make the patentee whole because the patentee also lost the use of its money due to infringement. *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655-56 (1983). In *General Motors*, the Supreme Court made pre-judgment interest the rule, not the exception. *Id.* at 652-53

US007035914B1

(12) **United States Patent**
Payne et al.

(10) **Patent No.: US 7,035,914 B1**
(45) **Date of Patent: Apr. 25, 2006**

(54) **SYSTEM AND METHOD FOR TRANSMISSION OF DATA**

(75) Inventors: **John M. Payne**, Newport Beach, CA (US); **Tim Von Kaenel**, Coto de Casa, CA (US); **Jeffrey Wang**, Horsham, PA (US); **Jeffrey Odell**, Newport Beach, CA (US); **David Starr**, New York, NY (US); **Jason Katz**, New York, NY (US)

(73) Assignee: **SimpleAir Holdings, Inc.**, Costa Mesa, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/350,467**

(22) Filed: **Jul. 9, 1999**

Related U.S. Application Data

(63) Continuation of application No. 08/788,613, filed on Jan. 24, 1997.

(60) Provisional application No. 60/026,471, filed on Sep. 23, 1996, provisional application No. 60/014,735, filed on Apr. 1, 1996, provisional application No. 60/014,341, filed on Mar. 29, 1996, provisional application No. 60/010,651, filed on Jan. 26, 1996.

(51) **Int. Cl.**
G06F 15/16 (2006.01)
G08B 5/22 (2006.01)

(52) **U.S. Cl.** **709/219**; 709/236; 340/7.29

(58) **Field of Classification Search** 709/203, 709/219, 236; 340/7.1–7.63
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,356,546	A	10/1982	Whiteside et al.	364/200
4,893,339	A	1/1990	Bright et al.	380/28
5,008,926	A	4/1991	Misholi	379/89
5,010,317	A	4/1991	Schwendeman et al.	340/311.1
5,043,721	A *	8/1991	May	340/825.44
5,045,852	A	9/1991	Mitchell et al.	341/51
5,109,486	A	4/1992	Seymour	395/200
5,136,523	A	8/1992	Landers	395/54
5,140,419	A	8/1992	Galumbeck et al.	358/142
H1173	H	4/1993	Davis et al.	340/825.44
5,229,768	A	7/1993	Thomas	341/51
5,247,614	A	9/1993	Eagen et al.	395/200
5,253,294	A	10/1993	Maurer	380/21
5,281,967	A	1/1994	Jung	341/55

(Continued)

OTHER PUBLICATIONS

Ammons, B., "RBDS for Your Station!" http://www.crlsystems.com/crl/tech/rbds.html, Circuit Research Labs, Inc., pp. 1-13. (Sep. 1995).

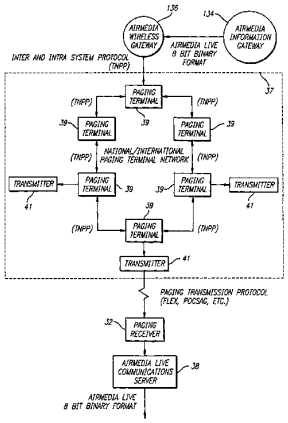
(Continued)

Primary Examiner—Larry D. Donaghue
(74) *Attorney, Agent, or Firm*—Christopher J. Rourk; Godwin Pappas Langley Ronquillo LLP

(57) **ABSTRACT**

A system and method for data communication connecting on-line networks with on-line and off-line computers. The present system provides for broadcast of up to the minute notification centric information thereby providing an instant call to action for users who are provided with the ability to instantaneously retrieve further detailed information. The notification centric portions of information is wirelessly broadcast to wireless receiving devices which are attached to computing devices. Upon receipt of the information at the personal computer, the user is notified through different multimedia alerts that there is an incoming message. Wirelessly broadcasted URL's, associated with the data, are embedded in data packets and provide an automated wired or wireless connection back to the information source for obtaining detailed data.

76 Claims, 30 Drawing Sheets



ADD-122

U.S. PATENT DOCUMENTS

5,295,244	A		3/1994	Dev et al. 395/161
5,311,570	A		5/1994	Grimes et al. 379/57
5,315,635	A		5/1994	Kane et al. 379/57
5,325,505	A		6/1994	Hoffecker et al. 395/425
5,341,425	A		8/1994	Wasilewski et al. 380/20
5,347,632	A		9/1994	Filepp et al. 395/200
5,367,670	A		11/1994	Ward et al. 395/575
5,371,499	A		12/1994	Graybill et al. 341/51
5,377,354	A		12/1994	Scannell et al. 395/650
5,392,451	A		2/1995	Schwendeman et al. ... 455/13.1
5,394,522	A		2/1995	Sanchez-Frank et al. ... 395/159
5,394,537	A		2/1995	Courts et al. 379/57
5,396,560	A		3/1995	Arcos et al. 455/12.1
5,398,021	A		3/1995	Moore 340/825.27
5,406,278	A		4/1995	Graybill et al. 341/51
5,406,279	A		4/1995	Anderson et al. 341/51
5,423,086	A		6/1995	Cannon et al. 455/186
5,442,652	A	*	8/1995	Jacobson 375/130
5,446,885	A		8/1995	Moore et al. 395/600
5,452,356	A		9/1995	Albert 380/9
5,459,458	A		10/1995	Richardson et al. ... 340/825.52
5,481,255	A		1/1996	Albert et al. 340/825.55
5,493,692	A		2/1996	Theimer et al. 455/26.1
5,504,476	A		4/1996	Marrs et al. 340/825.44
5,510,778	A		4/1996	Krieter et al. 340/825.44
5,510,808	A		4/1996	Cina, Jr. et al. 345/123
5,526,363	A		6/1996	Weiss et al. 370/118
5,530,645	A		6/1996	Chu 364/419.13
5,532,694	A		7/1996	Mayers et al. 341/67
5,537,586	A		7/1996	Amram et al. 395/600
5,543,781	A		8/1996	Ganucheau, Jr. et al. 340/825.44
5,544,320	A		8/1996	Konrad 395/200.09
5,544,354	A		8/1996	May et al. 395/600
5,548,814	A		8/1996	Lorang et al. 455/38.1
5,555,446	A		9/1996	Jasinski 455/54.2
5,572,643	A		11/1996	Judson 395/793
5,581,576	A		12/1996	Lanzetta et al. 375/216
5,592,512	A		1/1997	Spiess 375/240
5,596,318	A		1/1997	Mitchell 340/825.44
5,596,694	A		1/1997	Capps 395/152
5,602,596	A		2/1997	Claussen et al. 348/564
5,606,569	A		2/1997	MacDonald et al. 371/37.7
5,614,899	A		3/1997	Tokuda et al. 341/51
H1641	H		4/1997	Sharman 379/60
5,617,541	A		4/1997	Albanese et al. 395/200.13
5,617,565	A		4/1997	Augenbraun et al. 395/604
5,623,589	A		4/1997	Needham et al. 395/160
5,623,613	A		4/1997	Rowe et al. 395/353
5,627,978	A		5/1997	Altom et al. 395/330
5,634,062	A		5/1997	Shimizu et al. 395/762
5,701,302	A	*	12/1997	Geiger 370/521
5,732,338	A	*	3/1998	Schwob 455/158.5
5,790,958	A	*	8/1998	McCoy et al. 455/557
5,796,394	A		8/1998	Wicks et al. 345/331
5,809,415	A	*	9/1998	Rossmann 455/422
5,838,252	A		11/1998	Kikinis 340/825.44
5,872,921	A		2/1999	Zahariev et al. 709/203
5,892,432	A		4/1999	Skoog 340/313
6,021,433	A	*	2/2000	Payne et al. 709/219
6,167,426	A	*	12/2000	Payne et al. 709/200
2003/0167300	A1	*	9/2003	Ullman et al. 709/203

OTHER PUBLICATIONS

Beam, M., "A Summary of Data Broadcasting Technologies and Potential Applications in Today's Market" http://www.dungeon.com/~start/rds_0030.html, Milestone Technologies, Inc., pp. 1-8 (Dec. 1994).

Hemingway, D., "Radio Data System," http://www.dungeon.com/~start/rdsdh.html, pp. 1-9. (Dec. 1995).

Motorola, Inc. Short Form Address With Message Protocol, Jun. 24, 1995. http://www.mot.com/MIMS/PPG/products/2way/reflex/tam_isv/sfp_s2.html, see entire document.

Motorola, Inc. Short Form Address With Message Protocol, Jun. 21, 1995. http://www.mot.com/MIMS/MSPG/CTSD/products/short_form/sfp_s2.html, see entire document.

* cited by examiner

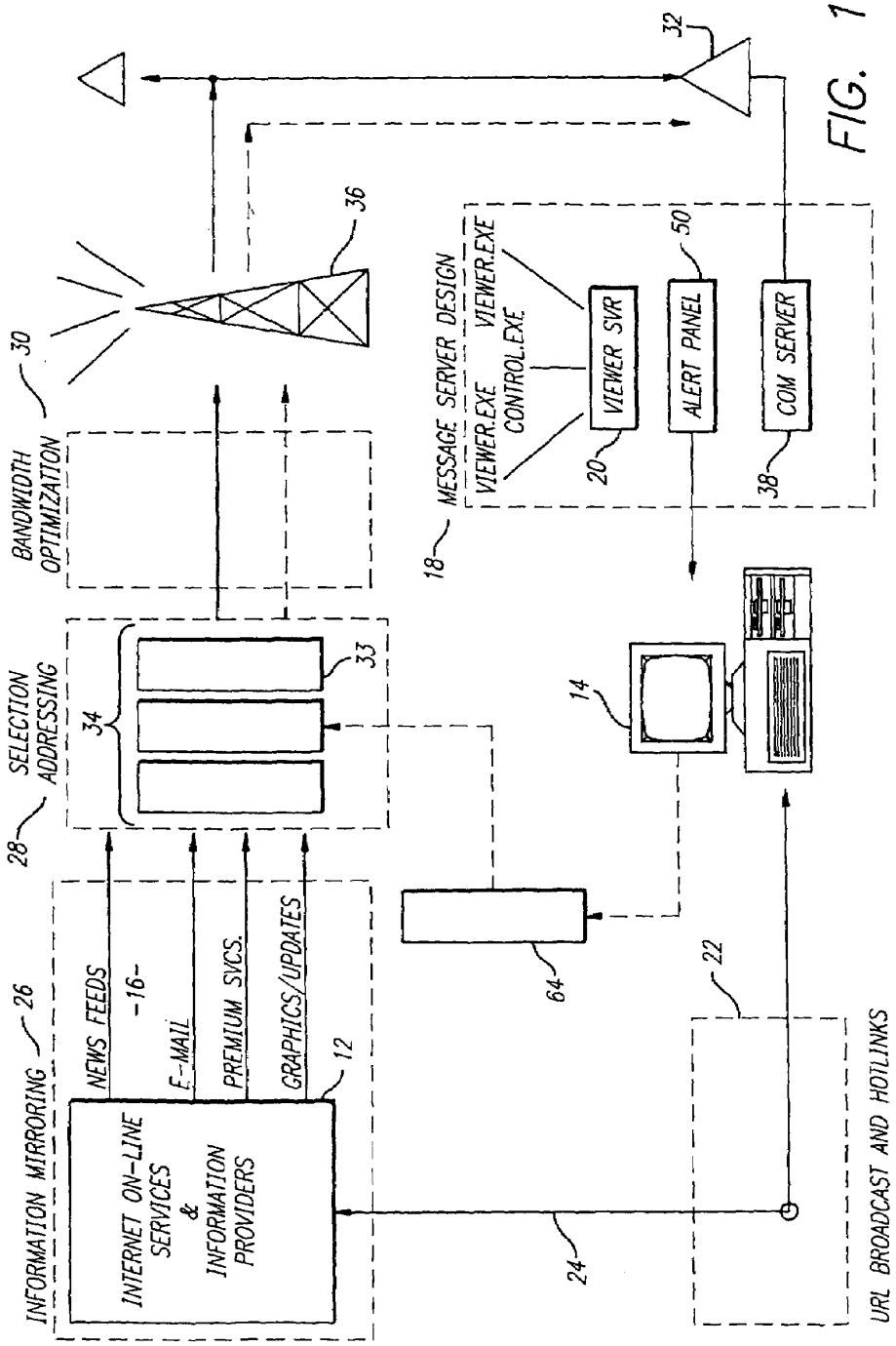
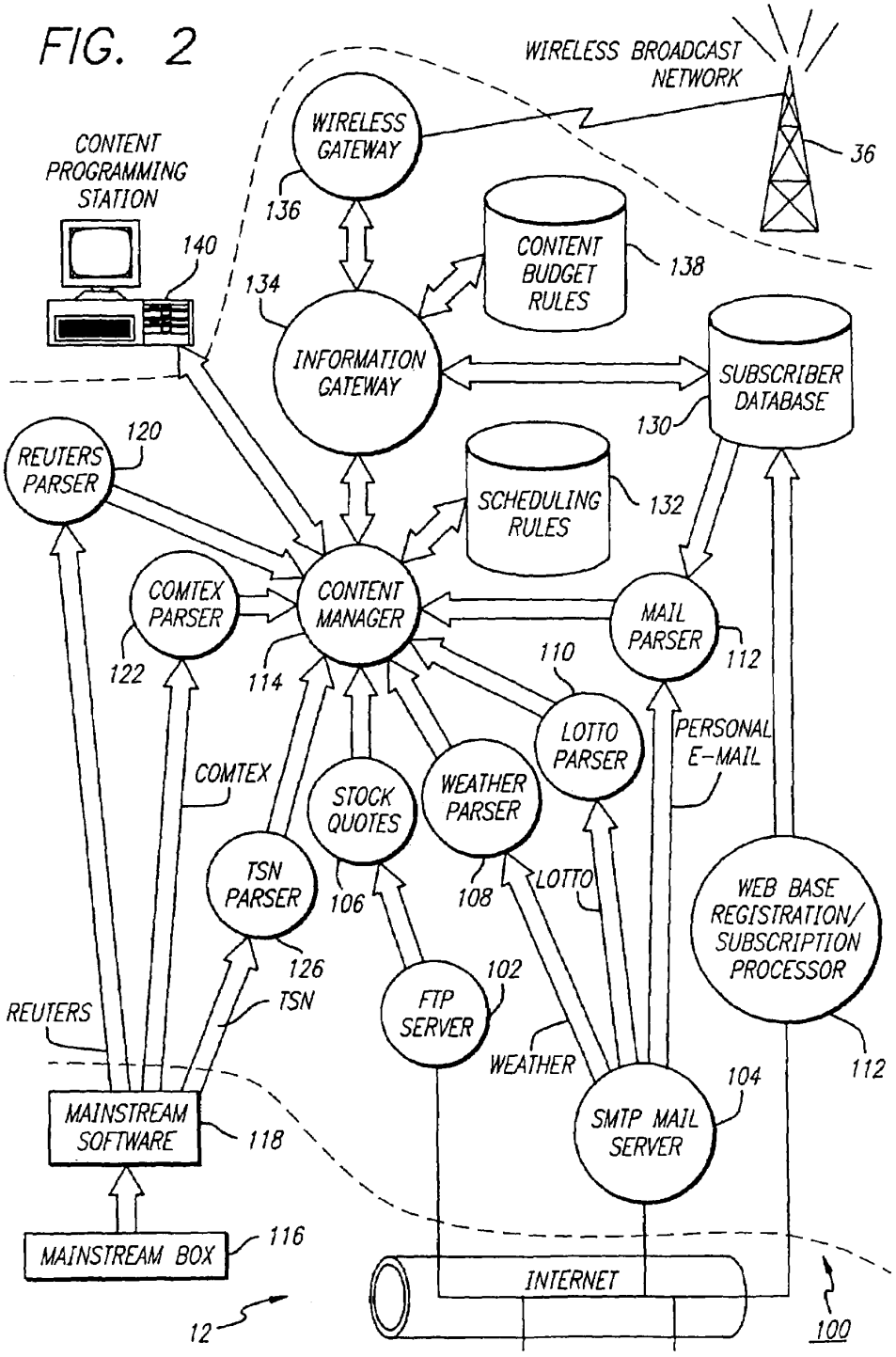

INFORMATION MIRRORING
26
NEWS FEEDS
-16-
E-MAIL
PREMIUM SVCS.
GRAPHICS/UPDATES
12
INTERNET ON-LINE SERVICES & INFORMATION PROVIDERS
SELECTION ADDRESSING
28
34
33
BANDWIDTH OPTIMIZATION
30
36
32
MESSAGE SERVER DESIGN
18
VIEWER.EXE
VIEWER.EXE
CONTROL.EXE
VIEWER SVR
20
ALERT PANEL
50
COM SERVER
38
14
64
24
22
URL BROADCAST AND HOTLINKS

FIG. 1

FIG. 2


WIRELESS BROADCAST NETWORK
36
WIRELESS GATEWAY
136
CONTENT PROGRAMMING STATION
140
CONTENT BUDGET RULES
138
134
INFORMATION GATEWAY
SUBSCRIBER DATABASE
130
120
REUTERS PARSER
SCHEDULING RULES
132
COMTEX PARSER
CONTENT MANAGER
MAIL PARSER
112
122
114
110
LOTTO PARSER
PERSONAL E-MAIL
COMTEX
STOCK QUOTES
WEATHER PARSER
TSN PARSER
106
108
LOTTO
WEB BASE REGISTRATION/ SUBSCRIPTION PROCESSOR
126
102
TSN
FTP SERVER
REUTERS
WEATHER
104
MAINSTREAM SOFTWARE
118
SMTP MAIL SERVER
112
MAINSTREAM BOX
116
INTERNET
12
100

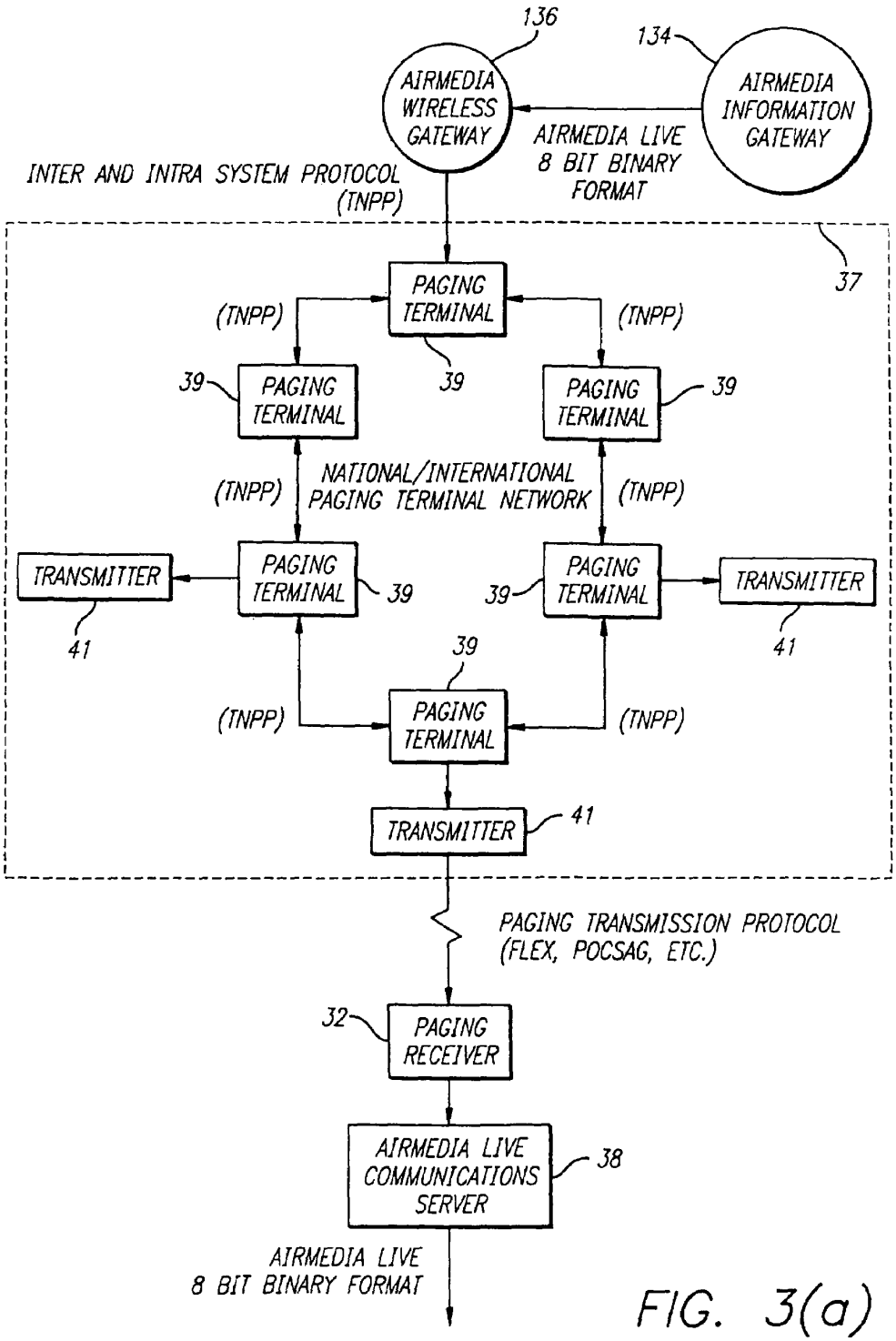

136
134
AIRMEDIA WIRELESS GATEWAY
AIRMEDIA INFORMATION GATEWAY
AIRMEDIA LIVE 8 BIT BINARY FORMAT
INTER AND INTRA SYSTEM PROTOCOL (TNPP)
37
PAGING TERMINAL
(TNPP)
39
NATIONAL/INTERNATIONAL PAGING TERMINAL NETWORK
TRANSMITTER
41
PAGING TRANSMISSION PROTOCOL (FLEX, POCSAG, ETC.)
32
PAGING RECEIVER
AIRMEDIA LIVE COMMUNICATIONS SERVER
38
AIRMEDIA LIVE 8 BIT BINARY FORMAT

FIG. 3(a)

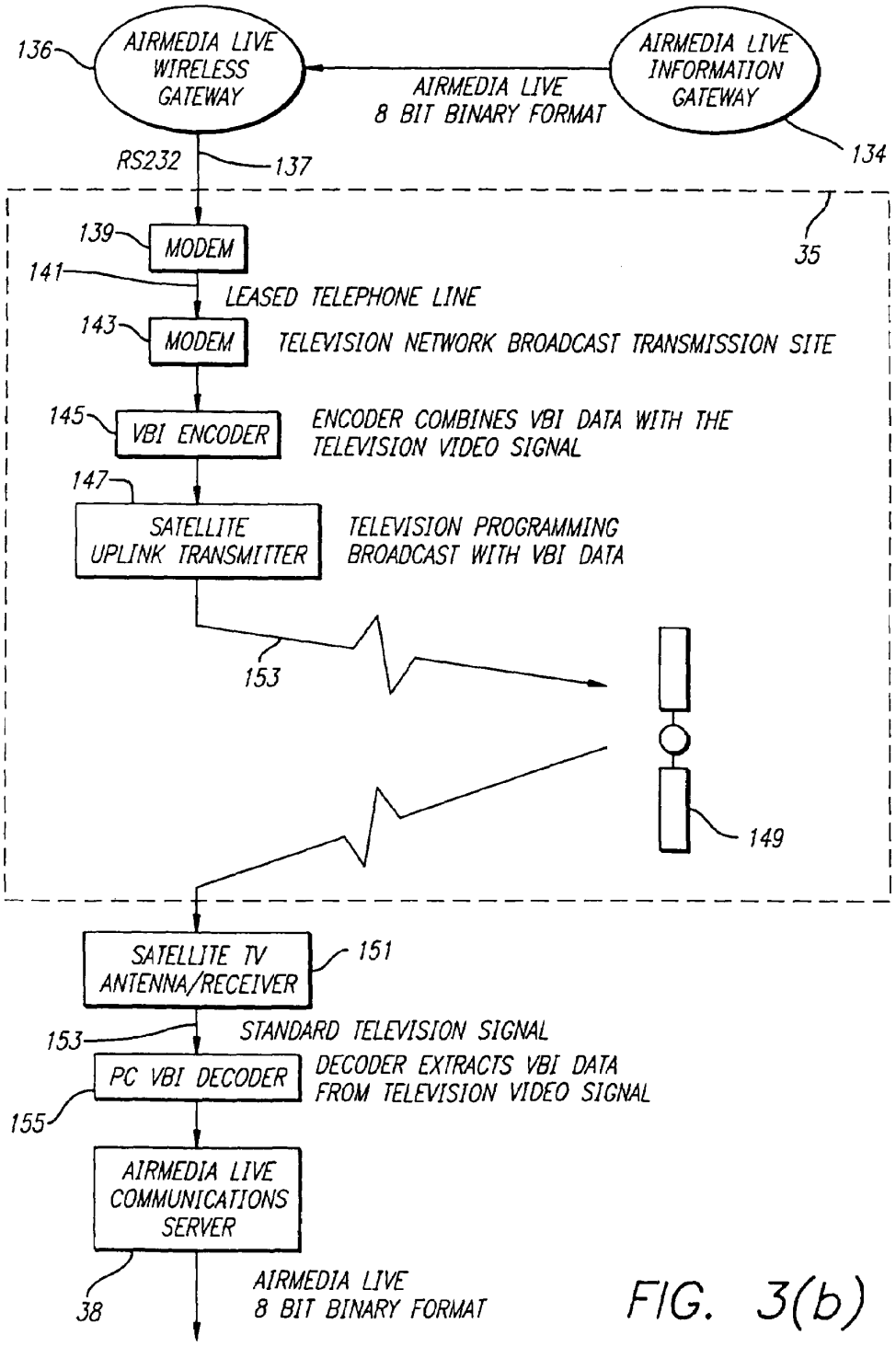

136
AIRMEDIA LIVE WIRELESS GATEWAY
AIRMEDIA LIVE 8 BIT BINARY FORMAT
AIRMEDIA LIVE INFORMATION GATEWAY
134
RS232
137
35
139
MODEM
141
LEASED TELEPHONE LINE
143
MODEM
TELEVISION NETWORK BROADCAST TRANSMISSION SITE
145
VBI ENCODER
ENCODER COMBINES VBI DATA WITH THE TELEVISION VIDEO SIGNAL
147
SATELLITE UPLINK TRANSMITTER
TELEVISION PROGRAMMING BROADCAST WITH VBI DATA
153
149
SATELLITE TV ANTENNA/RECEIVER
151
153
STANDARD TELEVISION SIGNAL
PC VBI DECODER
DECODER EXTRACTS VBI DATA FROM TELEVISION VIDEO SIGNAL
155
AIRMEDIA LIVE COMMUNICATIONS SERVER
38
AIRMEDIA LIVE 8 BIT BINARY FORMAT

FIG. 3(b)

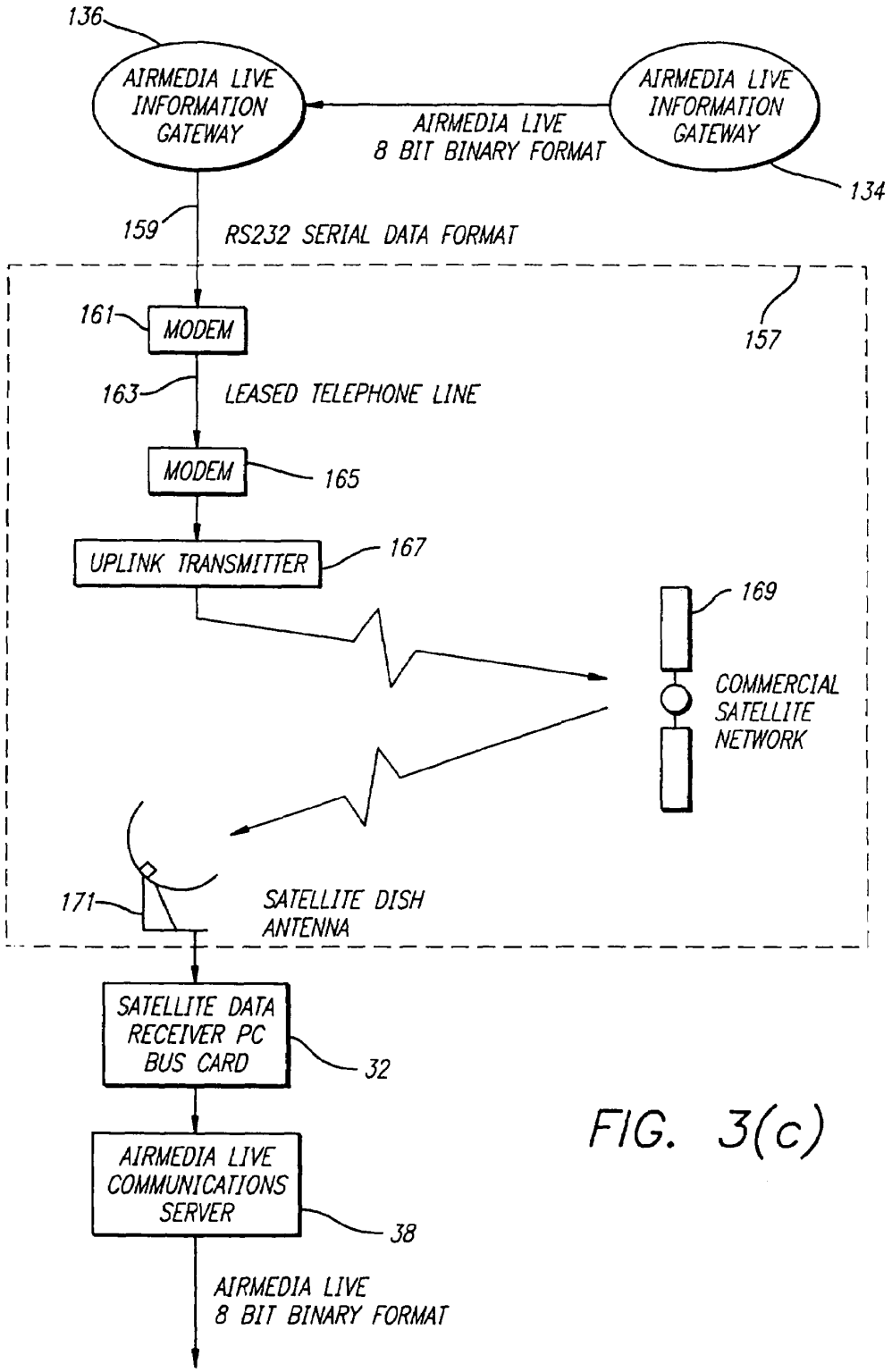

136
AIRMEDIA LIVE INFORMATION GATEWAY
AIRMEDIA LIVE 8 BIT BINARY FORMAT
AIRMEDIA LIVE INFORMATION GATEWAY
134
159
RS232 SERIAL DATA FORMAT
157
161
MODEM
163
LEASED TELEPHONE LINE
MODEM
165
UPLINK TRANSMITTER
167
169
COMMERCIAL SATELLITE NETWORK
171
SATELLITE DISH ANTENNA
SATELLITE DATA RECEIVER PC BUS CARD
32
AIRMEDIA LIVE COMMUNICATIONS SERVER
38
AIRMEDIA LIVE 8 BIT BINARY FORMAT

FIG. 3(c)

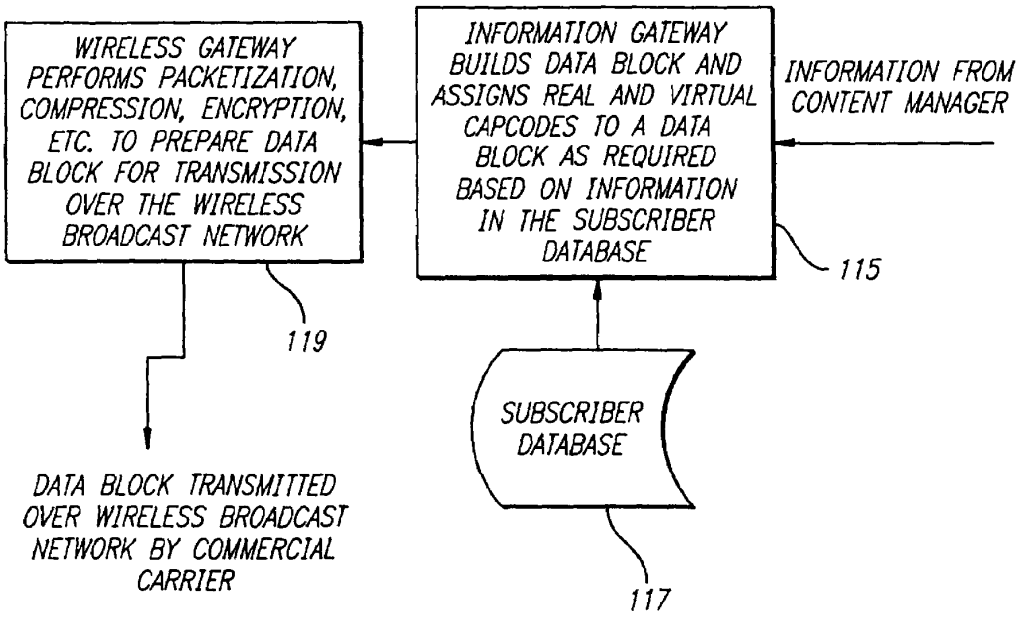

WIRELESS GATEWAY PERFORMS PACKETIZATION, COMPRESSION, ENCRYPTION, ETC. TO PREPARE DATA BLOCK FOR TRANSMISSION OVER THE WIRELESS BROADCAST NETWORK
INFORMATION GATEWAY BUILDS DATA BLOCK AND ASSIGNS REAL AND VIRTUAL CAPCODES TO A DATA BLOCK AS REQUIRED BASED ON INFORMATION IN THE SUBSCRIBER DATABASE
INFORMATION FROM CONTENT MANAGER
115
119
SUBSCRIBER DATABASE
DATA BLOCK TRANSMITTED OVER WIRELESS BROADCAST NETWORK BY COMMERCIAL CARRIER
117

FIG. 4

FIG. 5-1

Item	Size	Description
Header:		
CRC	2 bytes	Standard Cyclical Redundancy Code to verify data block integrity.
Header Type	1 bit	If bit clear, then this is a message header. If bit set, then this is the data block header.
Custom Header Flag	1 bit	If bit clear, no custom header. If bit set, then a custom header is included in the data block.
Version Number	4 bits	Protocol version used.
Private Data Block Flag	1 bit	If bit clear, then this data block will be passed on to the Alert Panel for processing and display. If bit set, then this is a private data block to be processed internally by the Communications Server.
Virtual Capcode Flag	1 bit	If bit clear, then this data block is not targeted for a specific virtual capcode and no virtual capcode is included in the data block. If bit set, then this data block contains a virtual capcode.
Data Block Type	1 byte	The value of this byte specifies the type of data contained in the data block. If Private Data Block Flag is clear: 1 = plain text, 2 = AirMedia Live data feed format. If Private Data Block Flag is set: 1 = Capcode reprogramming message, 2 = Binary file transfer.
Data Block Version	4 bits	The version number of this data block's format.

FIG. 5-2

Use Compression Flag	1 bit	If bit clear, then this data block is not compressed. If bit set, then compression is used and the compression type is specified in the Compression ID item.
Use Encryption Flag	1 bit	If bit clear, then this data block is not encrypted. If bit set, then this data block is encrypted.
Spare	2 bits	Reserved for future use.
Compression ID (optional)	1 byte	Included only if Use Compression Flag is set. Indicates the type of compression used.
Virtual Capcode (optional)	1 byte	Included only if Virtual Capcode flag is set. Contains the virtual capcode to which this data block is targeted.
Size of Custom Header (optional)	1 byte	Included only if Custom Header Flag is set. Contains the size in bytes of the custom header.
Custom Header (optional)	variable	Reserved for future enhancements to data block protocol. Size determined from previous item.
Contents:		
Data Block Contents	variable	Information notification data from the information source to be processed by AirMedia Live software.

FIG. 6

Item	Size	Description
Header:		
Alert Length	1 byte	The size of the alert data in bytes.
Alert Type	1 byte	The value of this item defines the alert type (e.g. new e-mail arrival alert). Up to 256 predefined alert types are allowed.
Contents:		
Alert Data	variable	Personal alert notification data. Size of data is determined by the Alert Length item.

FIG. 9

Item	Size	Description
Header:		
Packet Type	4 bits	The value of this item indicates the packet type: 0 = Standard AirMedia Live Packet; 1 = Single Packet Data Block; if the left most bit (high bit) is set, then this is a Binary Alert Packet.
Data Block ID	12 bits	The ID of the data block contained in this packet.
Contents:		
Packet Contents	variable	The header and contents of the data block contained in this packet.

FIG. 7

Item	Size	Description
Header:		
CRC	2 bytes	Standard Cyclical Redundancy Code to verify message integrity.
Header Type	1 bit	If bit clear, then this is a message header. If bit set, then this is the data block header.
Custom Header Flag	1 bit	If bit clear, no custom header. If bit set, then a custom header is included in the message.
Data Block ID	14 bits	ID of the data block to which this message belongs.
Message Number	1 byte	The position of this message in the data block (i.e. message sequence number).
Total Messages	1 byte	Total number of messages in the data block.
Size of Custom Header (optional)	1 byte	Included only if Custom Header Flag is set. Contains the size in bytes of the custom header.
Custom Header (optional)	variable	Reserved for future enhancements to message protocol. Size determined from previous item.
Contents:		
Message Contents	variable	The data portion of the message.

FIG. 8

Item	Size	Description
Header:		
Packet Type	4 bits	The value of this item indicates the packet type: 0 = Standard AirMedia Live Packet; 1 = Single Packet Data Block; if the left most bit (high bit) is set, then this is a Binary Alert Packet.
Total Packets Flag	1 bit	If bit is clear, then the Total Data Packets and Total Error Correction Packets items are not present. If bit is set, then the Total Data Packets and Total Error Correction Packets items are present.
Message ID	11 bits	The number of the message to which this packet belongs.
Packet Number	1 byte	The position of this packet in the message (packet sequence number).
Total Data Packets	1 byte	Total number of data packets in the message (does not include error correction packets).
Total Error Correction Packets	1 byte	Total number of Reed-Solomon forward error correction packets in the message.
Contents:		
Packet Contents	variable	The data portion of the packet.

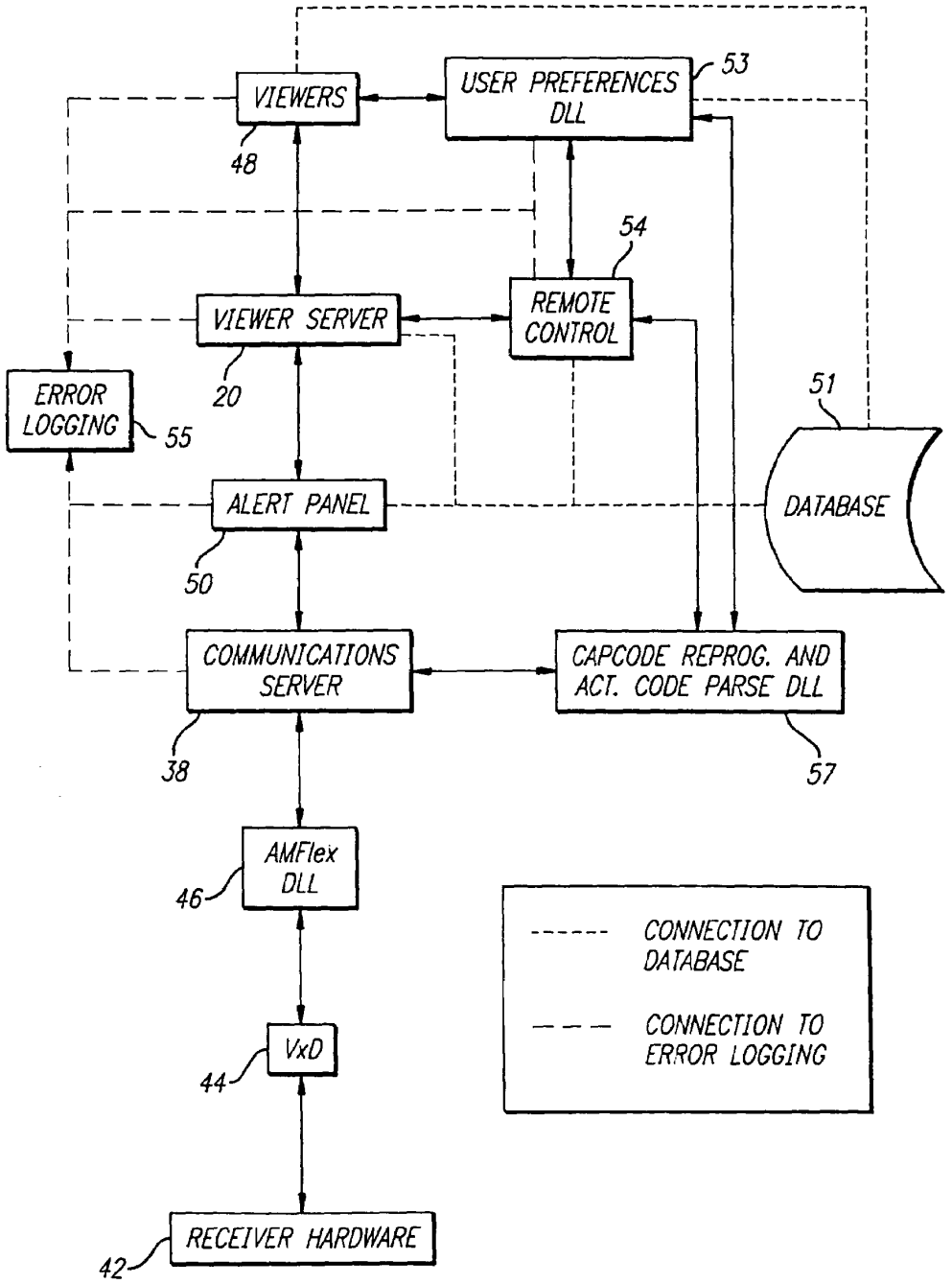

VIEWERS
48
USER PREFERENCES DLL
53
54
VIEWER SERVER
20
REMOTE CONTROL
ERROR LOGGING
55
51
DATABASE
ALERT PANEL
50
COMMUNICATIONS SERVER
38
CAPCODE REPROG. AND ACT. CODE PARSE DLL
57
AMFlex DLL
46
VxD
44
RECEIVER HARDWARE
42
CONNECTION TO DATABASE
CONNECTION TO ERROR LOGGING

FIG. 10

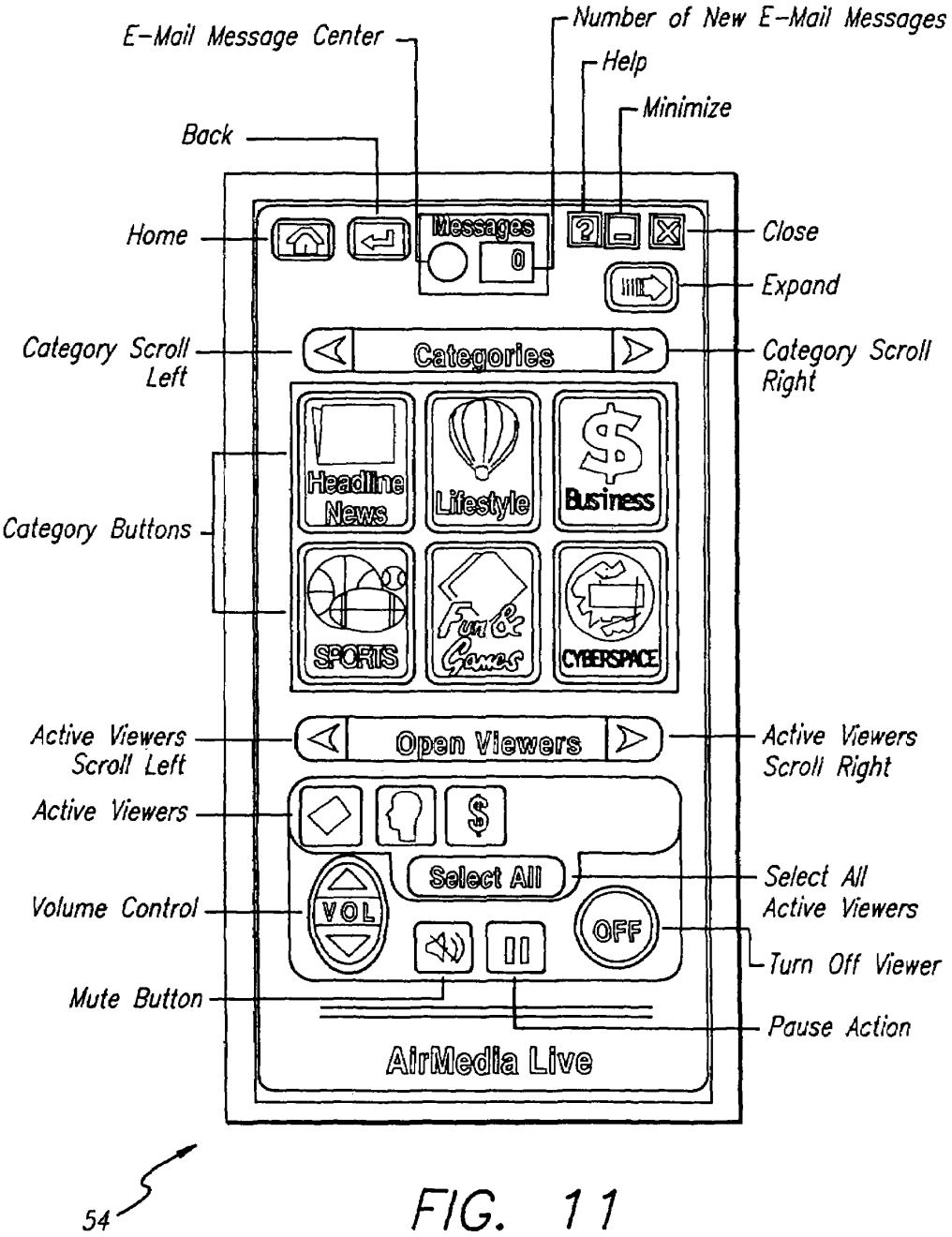

E-Mail Message Center
Number of New E-Mail Messages
Help
Minimize
Back
Home
Messages
0
Close
Expand
Category Scroll Left
Categories
Category Scroll Right
Category Buttons
Headline News
Lifestyle
Business
SPORTS
Fun & Games
CYBERSPACE
Active Viewers Scroll Left
Open Viewers
Active Viewers Scroll Right
Active Viewers
Select All
Select All Active Viewers
Volume Control
VOL
OFF
Turn Off Viewer
Mute Button
Pause Action
AirMedia Live
54

FIG. 11

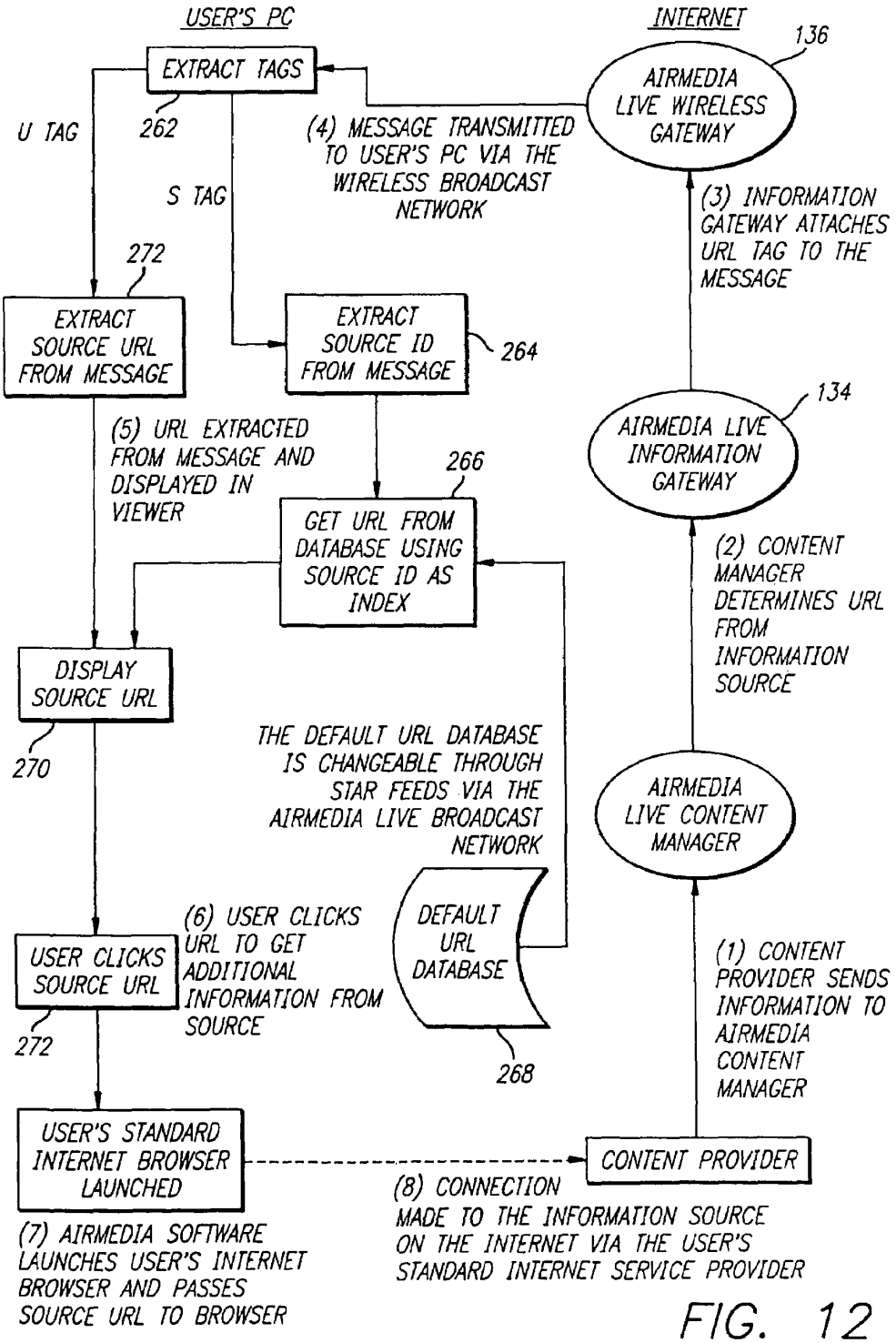

USER'S PC
INTERNET
EXTRACT TAGS
262
U TAG
S TAG
272
(4) MESSAGE TRANSMITTED TO USER'S PC VIA THE WIRELESS BROADCAST NETWORK
AIRMEDIA LIVE WIRELESS GATEWAY
136
(3) INFORMATION GATEWAY ATTACHES URL TAG TO THE MESSAGE
EXTRACT SOURCE URL FROM MESSAGE
EXTRACT SOURCE ID FROM MESSAGE
264
AIRMEDIA LIVE INFORMATION GATEWAY
134
(5) URL EXTRACTED FROM MESSAGE AND DISPLAYED IN VIEWER
266
GET URL FROM DATABASE USING SOURCE ID AS INDEX
(2) CONTENT MANAGER DETERMINES URL FROM INFORMATION SOURCE
DISPLAY SOURCE URL
270
THE DEFAULT URL DATABASE IS CHANGEABLE THROUGH STAR FEEDS VIA THE AIRMEDIA LIVE BROADCAST NETWORK
AIRMEDIA LIVE CONTENT MANAGER
(6) USER CLICKS URL TO GET ADDITIONAL INFORMATION FROM SOURCE
DEFAULT URL DATABASE
USER CLICKS SOURCE URL
272
268
(1) CONTENT PROVIDER SENDS INFORMATION TO AIRMEDIA CONTENT MANAGER
USER'S STANDARD INTERNET BROWSER LAUNCHED
CONTENT PROVIDER
(8) CONNECTION MADE TO THE INFORMATION SOURCE ON THE INTERNET VIA THE USER'S STANDARD INTERNET SERVICE PROVIDER
(7) AIRMEDIA SOFTWARE LAUNCHES USER'S INTERNET BROWSER AND PASSES SOURCE URL TO BROWSER

FIG. 12

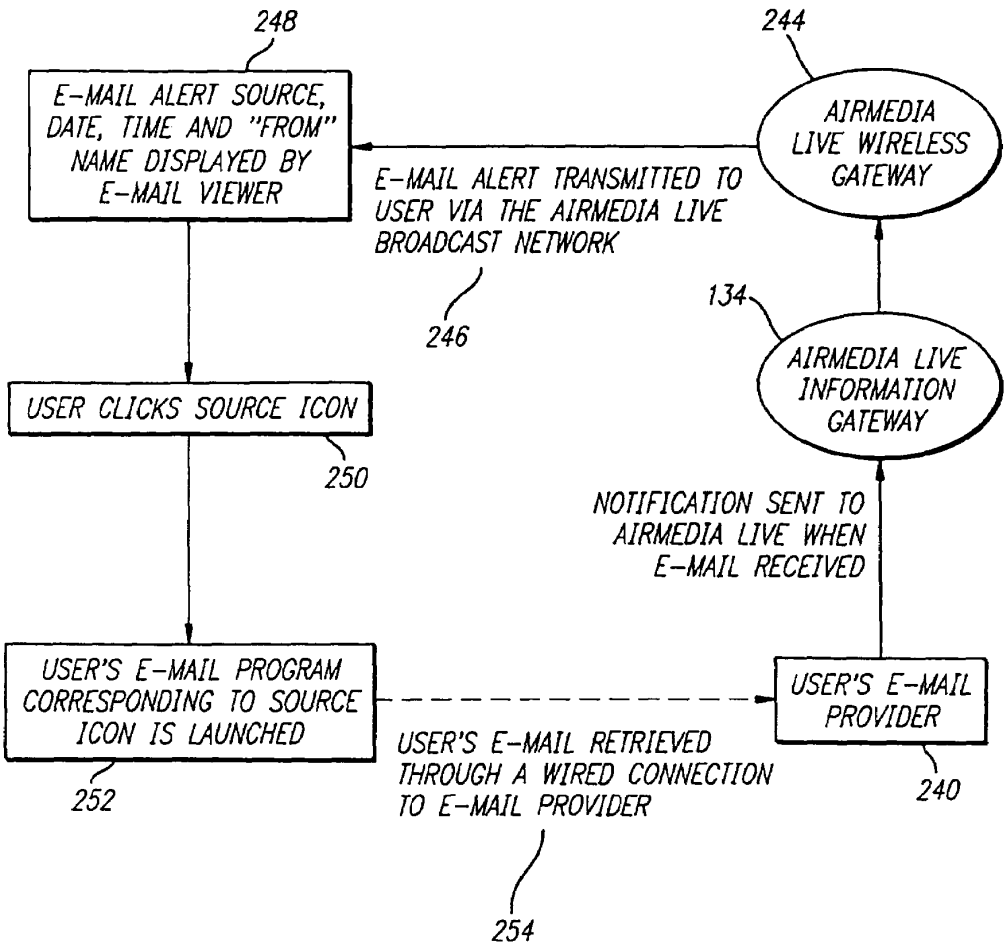

248
E-MAIL ALERT SOURCE, DATE, TIME AND "FROM" NAME DISPLAYED BY E-MAIL VIEWER
244
AIRMEDIA LIVE WIRELESS GATEWAY
E-MAIL ALERT TRANSMITTED TO USER VIA THE AIRMEDIA LIVE BROADCAST NETWORK
246
134
AIRMEDIA LIVE INFORMATION GATEWAY
USER CLICKS SOURCE ICON
250
NOTIFICATION SENT TO AIRMEDIA LIVE WHEN E-MAIL RECEIVED
USER'S E-MAIL PROGRAM CORRESPONDING TO SOURCE ICON IS LAUNCHED
252
USER'S E-MAIL PROVIDER
240
USER'S E-MAIL RETRIEVED THROUGH A WIRED CONNECTION TO E-MAIL PROVIDER
254

FIG. 13

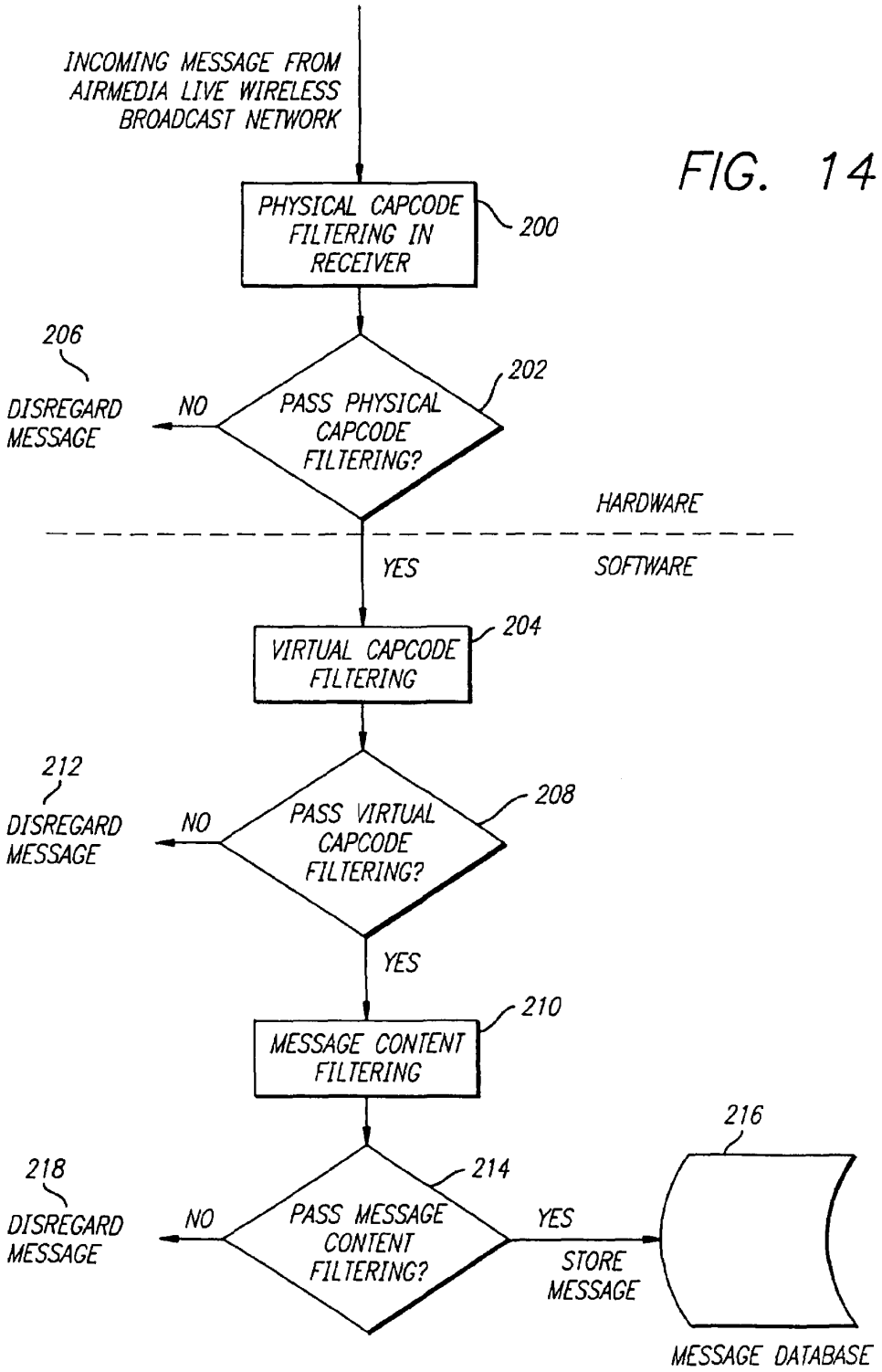

INCOMING MESSAGE FROM AIRMEDIA LIVE WIRELESS BROADCAST NETWORK
PHYSICAL CAPCODE FILTERING IN RECEIVER
200
206
DISREGARD MESSAGE
NO
PASS PHYSICAL CAPCODE FILTERING?
202
HARDWARE
SOFTWARE
YES
VIRTUAL CAPCODE FILTERING
204
212
DISREGARD MESSAGE
NO
PASS VIRTUAL CAPCODE FILTERING?
208
YES
MESSAGE CONTENT FILTERING
210
216
218
DISREGARD MESSAGE
NO
PASS MESSAGE CONTENT FILTERING?
214
YES
STORE MESSAGE
MESSAGE DATABASE

FIG. 14

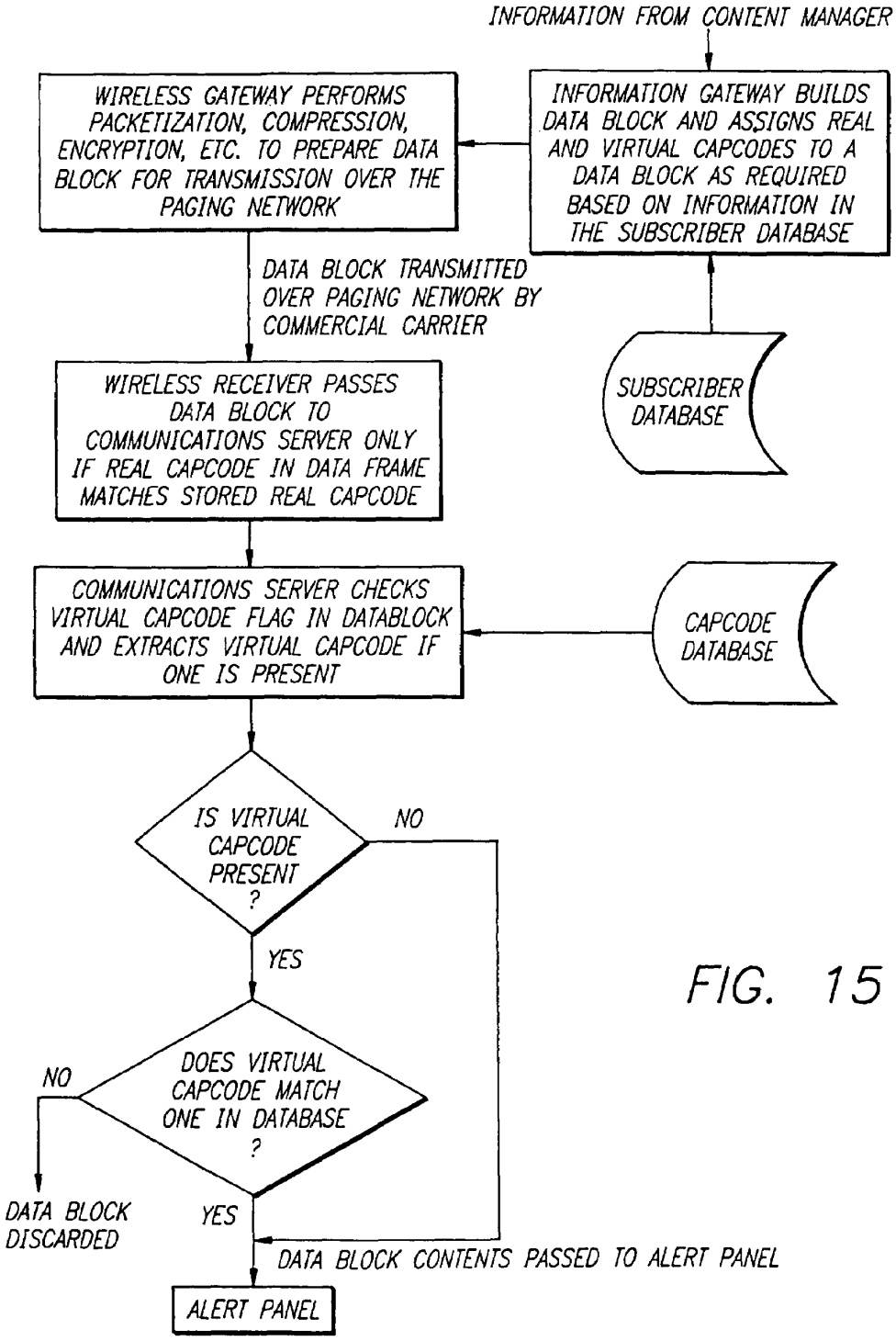
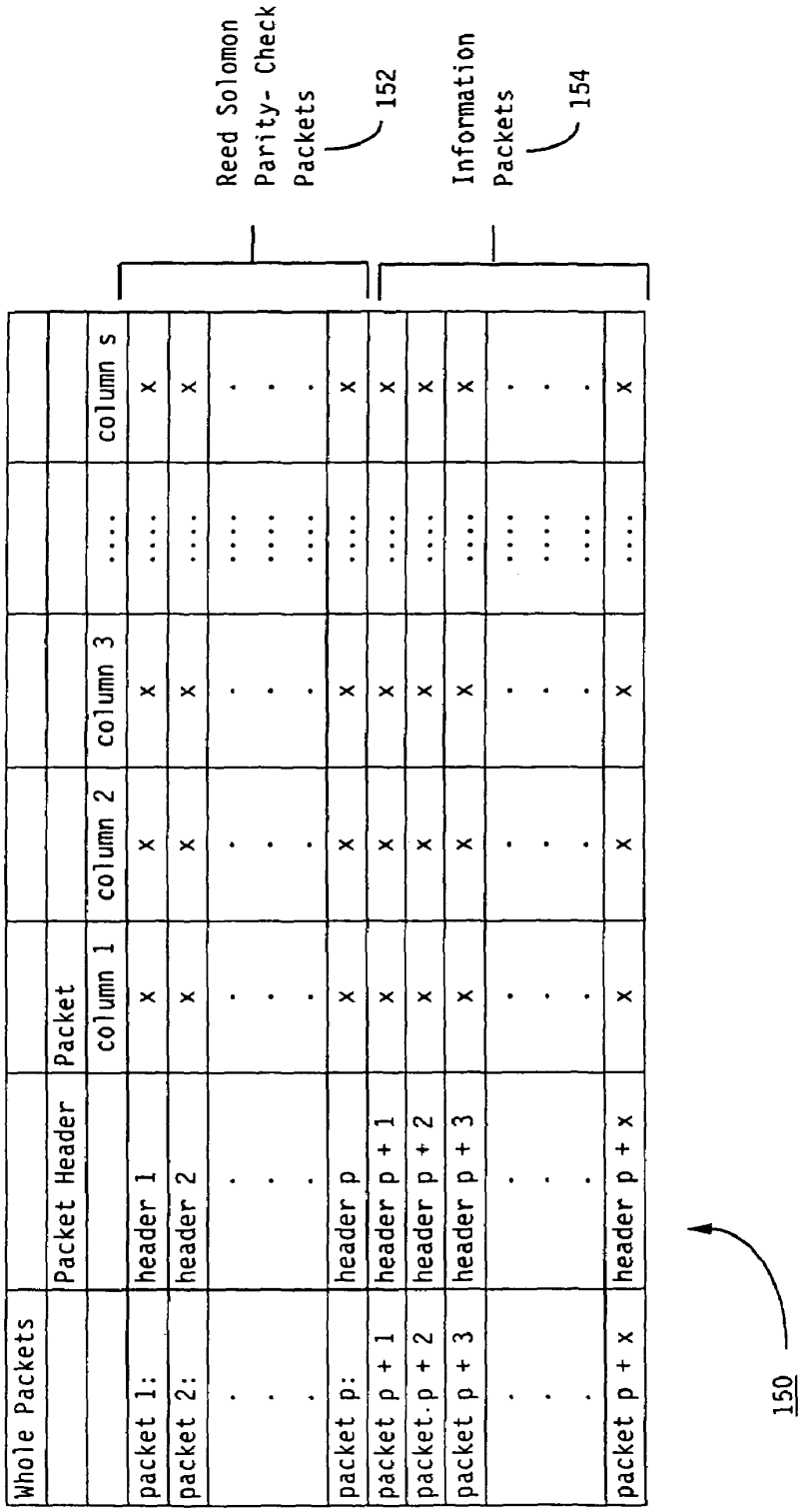

INFORMATION FROM CONTENT MANAGER
INFORMATION GATEWAY BUILDS DATA BLOCK AND ASSIGNS REAL AND VIRTUAL CAPCODES TO A DATA BLOCK AS REQUIRED BASED ON INFORMATION IN THE SUBSCRIBER DATABASE
WIRELESS GATEWAY PERFORMS PACKETIZATION, COMPRESSION, ENCRYPTION, ETC. TO PREPARE DATA BLOCK FOR TRANSMISSION OVER THE PAGING NETWORK
SUBSCRIBER DATABASE
DATA BLOCK TRANSMITTED OVER PAGING NETWORK BY COMMERCIAL CARRIER
WIRELESS RECEIVER PASSES DATA BLOCK TO COMMUNICATIONS SERVER ONLY IF REAL CAPCODE IN DATA FRAME MATCHES STORED REAL CAPCODE
COMMUNICATIONS SERVER CHECKS VIRTUAL CAPCODE FLAG IN DATABLOCK AND EXTRACTS VIRTUAL CAPCODE IF ONE IS PRESENT
CAPCODE DATABASE
IS VIRTUAL CAPCODE PRESENT ?
NO
YES
DOES VIRTUAL CAPCODE MATCH ONE IN DATABASE ?
NO
YES
DATA BLOCK DISCARDED
DATA BLOCK CONTENTS PASSED TO ALERT PANEL
ALERT PANEL

FIG. 15

FIG. 16


Reed Solomon Parity- Check Packets
152
Information Packets
154
Whole Packets
Packet Header
Packet
column 1
column 2
column 3
column s
packet 1:
header 1
packet 2:
header 2
packet p:
header p
packet p + 1
header p + 1
packet p + 2
header p + 2
packet p + 3
header p + 3
packet p + x
header p + x
150

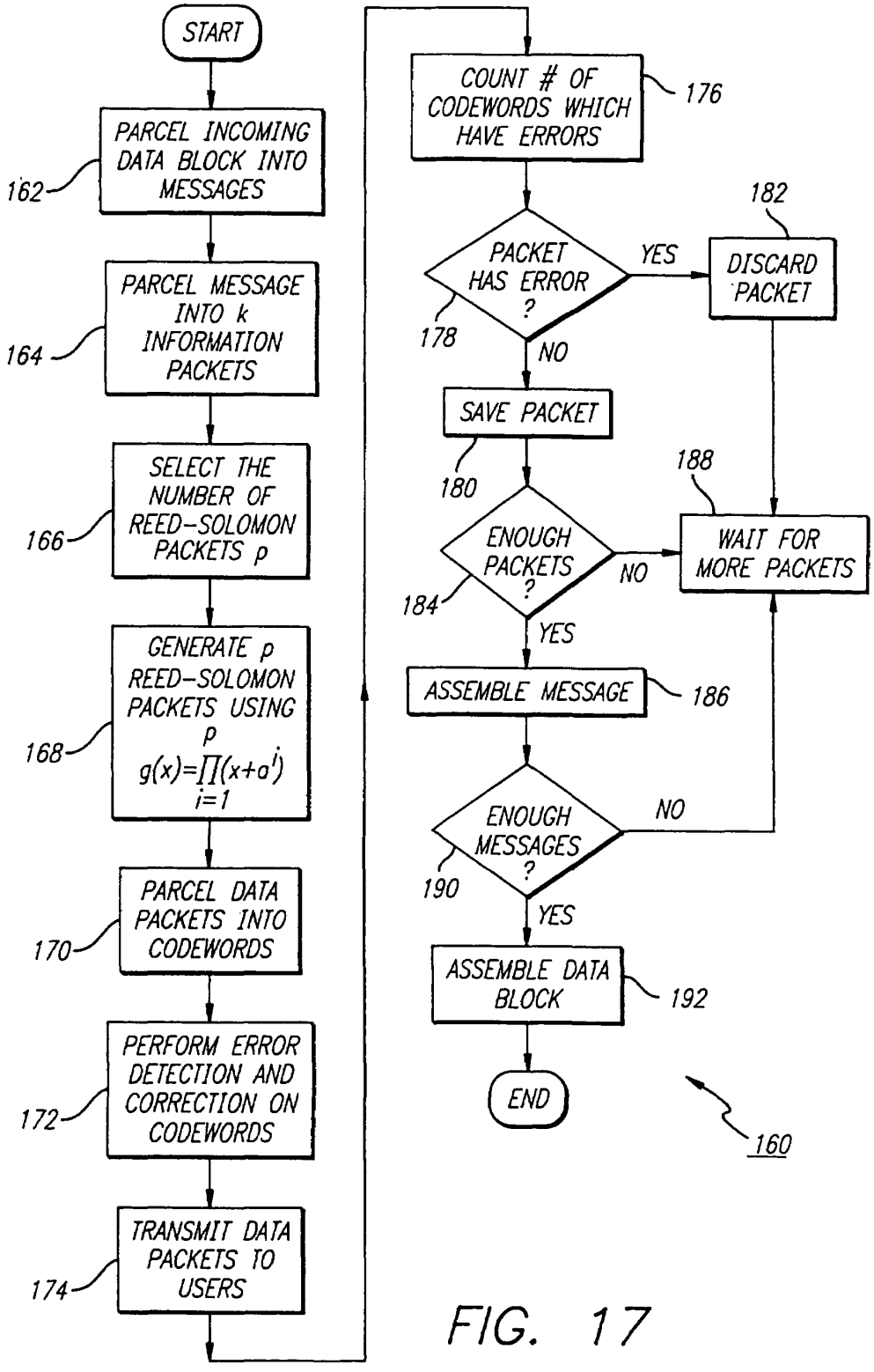
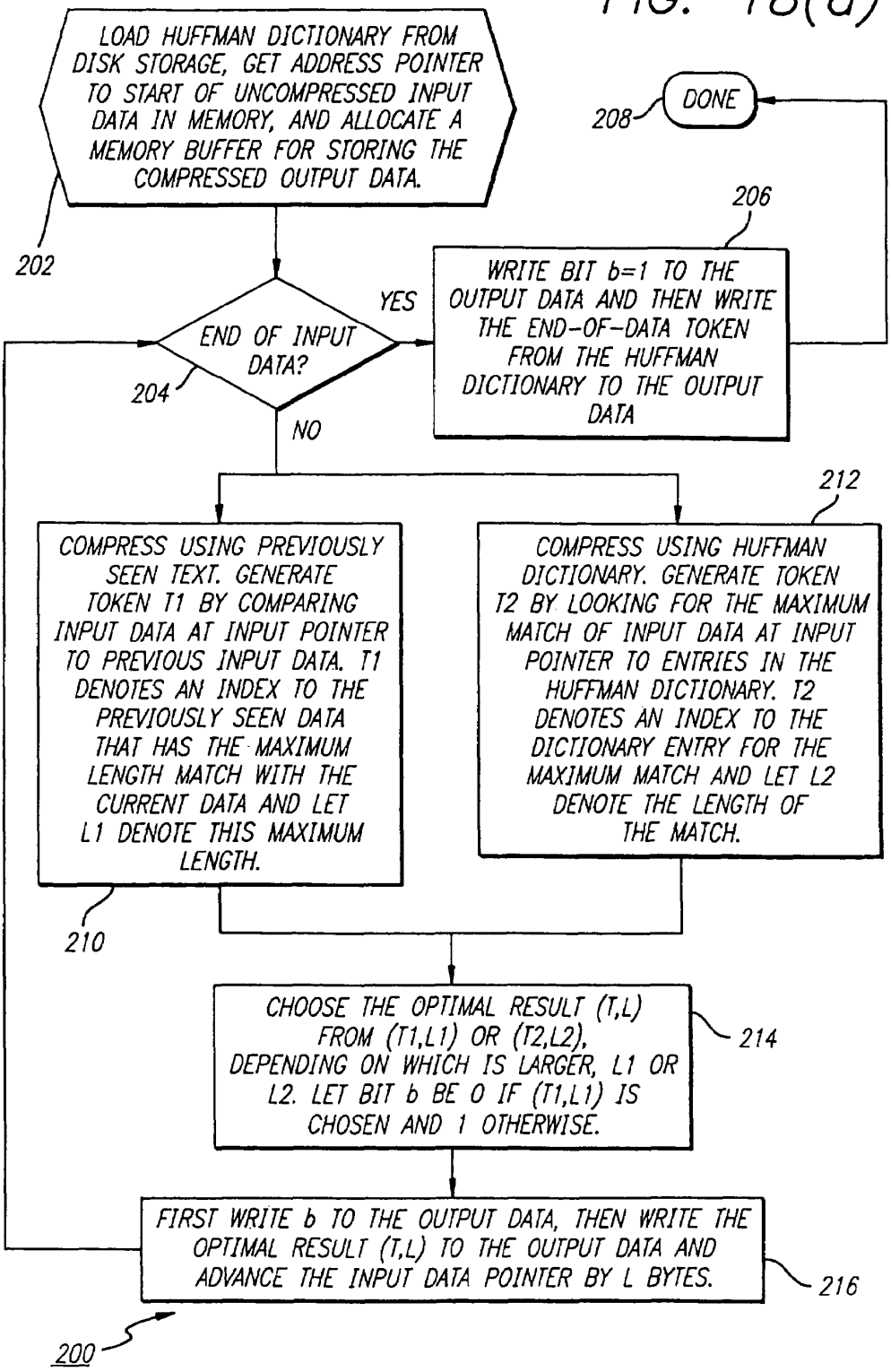

START
PARCEL INCOMING DATA BLOCK INTO MESSAGES
162
PARCEL MESSAGE INTO k INFORMATION PACKETS
164
SELECT THE NUMBER OF REED-SOLOMON PACKETS p
166
GENERATE p REED-SOLOMON PACKETS USING p
$g(x)=\prod_{i=1}(x+\alpha^i)$
168
PARCEL DATA PACKETS INTO CODEWORDS
170
PERFORM ERROR DETECTION AND CORRECTION ON CODEWORDS
172
TRANSMIT DATA PACKETS TO USERS
174
COUNT # OF CODEWORDS WHICH HAVE ERRORS
176
PACKET HAS ERROR ?
178
YES
DISCARD PACKET
182
NO
SAVE PACKET
180
ENOUGH PACKETS ?
184
NO
WAIT FOR MORE PACKETS
188
YES
ASSEMBLE MESSAGE
186
ENOUGH MESSAGES ?
190
NO
YES
ASSEMBLE DATA BLOCK
192
END
160

FIG. 17

FIG. 18(a)


LOAD HUFFMAN DICTIONARY FROM DISK STORAGE, GET ADDRESS POINTER TO START OF UNCOMPRESSED INPUT DATA IN MEMORY, AND ALLOCATE A MEMORY BUFFER FOR STORING THE COMPRESSED OUTPUT DATA.
202
END OF INPUT DATA?
204
YES
NO
WRITE BIT b=1 TO THE OUTPUT DATA AND THEN WRITE THE END-OF-DATA TOKEN FROM THE HUFFMAN DICTIONARY TO THE OUTPUT DATA
206
DONE
208
COMPRESS USING PREVIOUSLY SEEN TEXT. GENERATE TOKEN T1 BY COMPARING INPUT DATA AT INPUT POINTER TO PREVIOUS INPUT DATA. T1 DENOTES AN INDEX TO THE PREVIOUSLY SEEN DATA THAT HAS THE MAXIMUM LENGTH MATCH WITH THE CURRENT DATA AND LET L1 DENOTE THIS MAXIMUM LENGTH.
210
COMPRESS USING HUFFMAN DICTIONARY. GENERATE TOKEN T2 BY LOOKING FOR THE MAXIMUM MATCH OF INPUT DATA AT INPUT POINTER TO ENTRIES IN THE HUFFMAN DICTIONARY. T2 DENOTES AN INDEX TO THE DICTIONARY ENTRY FOR THE MAXIMUM MATCH AND LET L2 DENOTE THE LENGTH OF THE MATCH.
212
CHOOSE THE OPTIMAL RESULT (T,L) FROM (T1,L1) OR (T2,L2), DEPENDING ON WHICH IS LARGER, L1 OR L2. LET BIT b BE 0 IF (T1,L1) IS CHOSEN AND 1 OTHERWISE.
214
FIRST WRITE b TO THE OUTPUT DATA, THEN WRITE THE OPTIMAL RESULT (T,L) TO THE OUTPUT DATA AND ADVANCE THE INPUT DATA POINTER BY L BYTES.
216
200

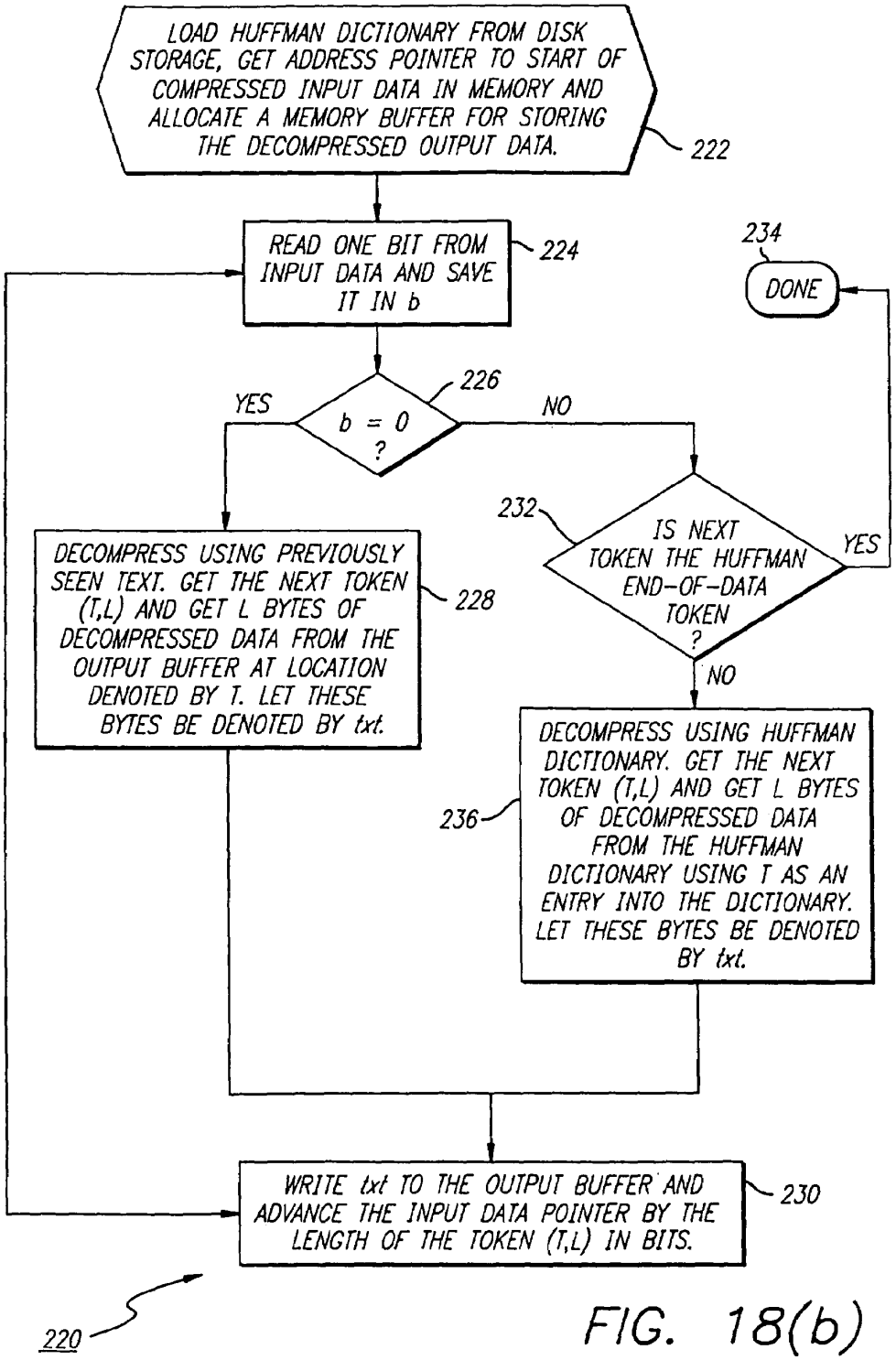

LOAD HUFFMAN DICTIONARY FROM DISK STORAGE, GET ADDRESS POINTER TO START OF COMPRESSED INPUT DATA IN MEMORY AND ALLOCATE A MEMORY BUFFER FOR STORING THE DECOMPRESSED OUTPUT DATA.
222
READ ONE BIT FROM INPUT DATA AND SAVE IT IN b
224
234
DONE
226
YES
b = 0 ?
NO
232
IS NEXT TOKEN THE HUFFMAN END-OF-DATA TOKEN ?
YES
NO
DECOMPRESS USING PREVIOUSLY SEEN TEXT. GET THE NEXT TOKEN (T,L) AND GET L BYTES OF DECOMPRESSED DATA FROM THE OUTPUT BUFFER AT LOCATION DENOTED BY T. LET THESE BYTES BE DENOTED BY txt.
228
DECOMPRESS USING HUFFMAN DICTIONARY. GET THE NEXT TOKEN (T,L) AND GET L BYTES OF DECOMPRESSED DATA FROM THE HUFFMAN DICTIONARY USING T AS AN ENTRY INTO THE DICTIONARY. LET THESE BYTES BE DENOTED BY txt.
236
WRITE txt TO THE OUTPUT BUFFER AND ADVANCE THE INPUT DATA POINTER BY THE LENGTH OF THE TOKEN (T,L) IN BITS.
230
220

FIG. 18(b)

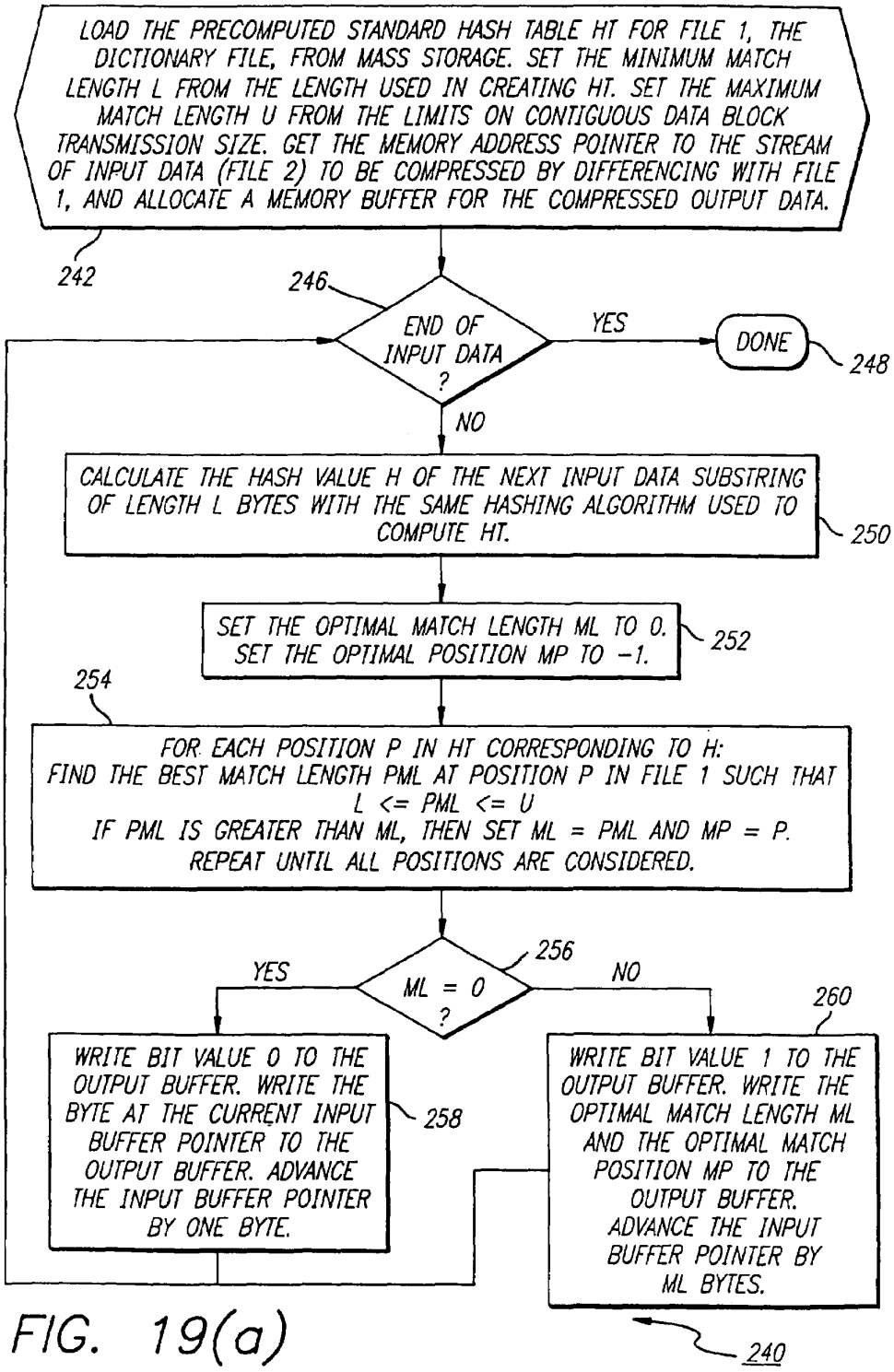

LOAD THE PRECOMPUTED STANDARD HASH TABLE HT FOR FILE 1, THE DICTIONARY FILE, FROM MASS STORAGE. SET THE MINIMUM MATCH LENGTH L FROM THE LENGTH USED IN CREATING HT. SET THE MAXIMUM MATCH LENGTH U FROM THE LIMITS ON CONTIGUOUS DATA BLOCK TRANSMISSION SIZE. GET THE MEMORY ADDRESS POINTER TO THE STREAM OF INPUT DATA (FILE 2) TO BE COMPRESSED BY DIFFERENCING WITH FILE 1, AND ALLOCATE A MEMORY BUFFER FOR THE COMPRESSED OUTPUT DATA.
242
246
END OF INPUT DATA ?
YES
DONE
248
NO
CALCULATE THE HASH VALUE H OF THE NEXT INPUT DATA SUBSTRING OF LENGTH L BYTES WITH THE SAME HASHING ALGORITHM USED TO COMPUTE HT.
250
SET THE OPTIMAL MATCH LENGTH ML TO 0. SET THE OPTIMAL POSITION MP TO −1.
252
254
FOR EACH POSITION P IN HT CORRESPONDING TO H:
FIND THE BEST MATCH LENGTH PML AT POSITION P IN FILE 1 SUCH THAT L <= PML <= U
IF PML IS GREATER THAN ML, THEN SET ML = PML AND MP = P.
REPEAT UNTIL ALL POSITIONS ARE CONSIDERED.
256
ML = 0 ?
YES
NO
260
WRITE BIT VALUE 0 TO THE OUTPUT BUFFER. WRITE THE BYTE AT THE CURRENT INPUT BUFFER POINTER TO THE OUTPUT BUFFER. ADVANCE THE INPUT BUFFER POINTER BY ONE BYTE.
258
WRITE BIT VALUE 1 TO THE OUTPUT BUFFER. WRITE THE OPTIMAL MATCH LENGTH ML AND THE OPTIMAL MATCH POSITION MP TO THE OUTPUT BUFFER. ADVANCE THE INPUT BUFFER POINTER BY ML BYTES.
240

FIG. 19(a)

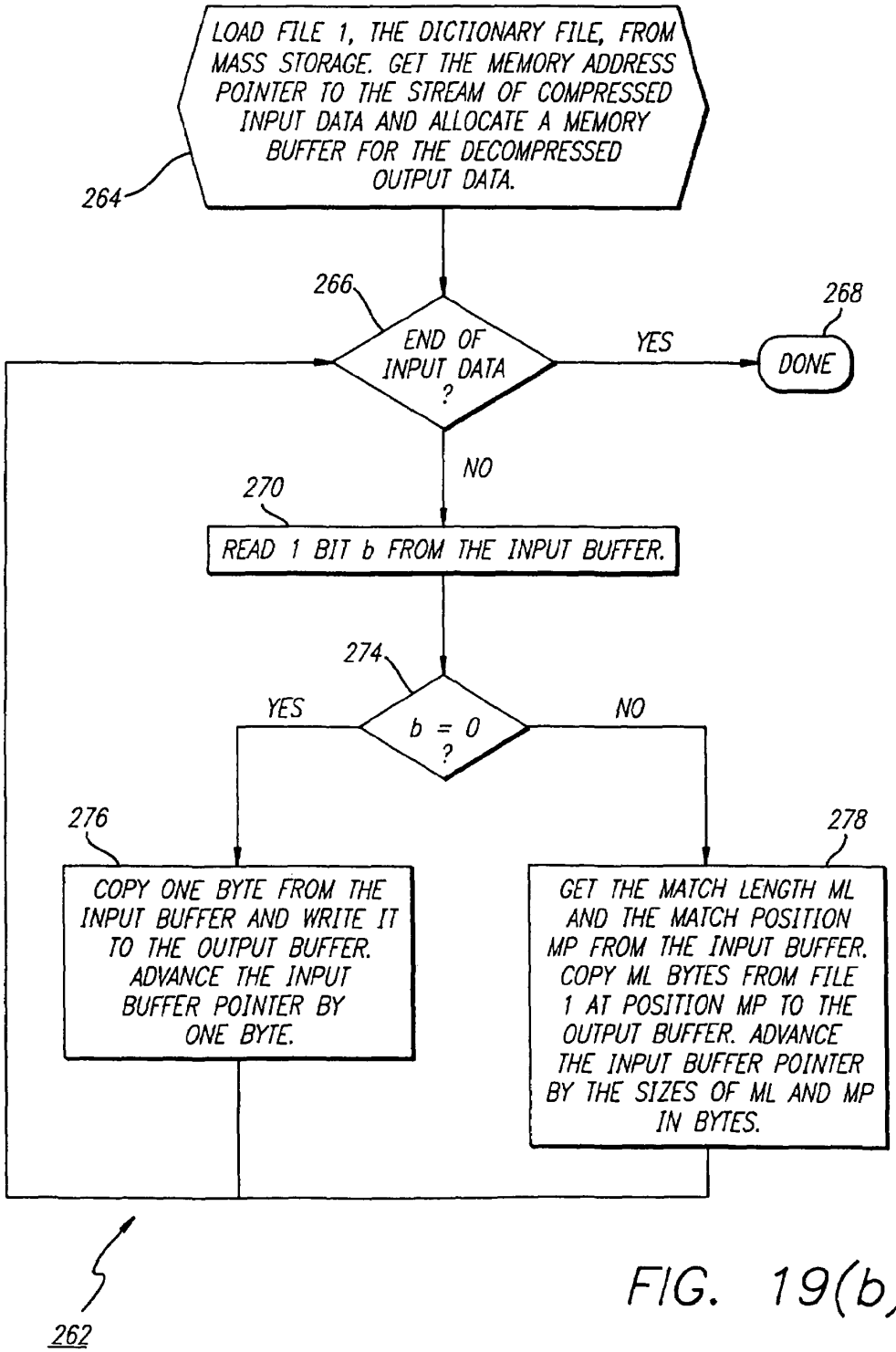
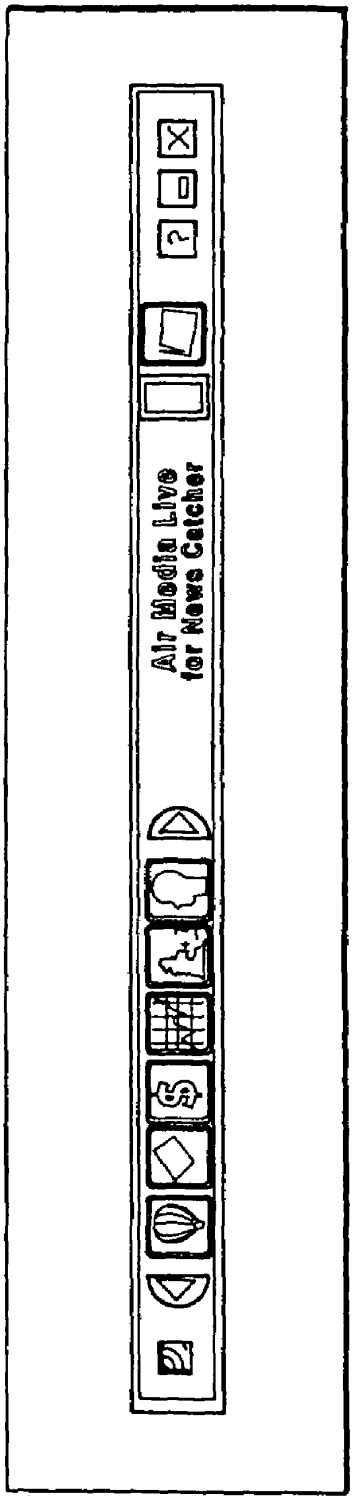

LOAD FILE 1, THE DICTIONARY FILE, FROM MASS STORAGE. GET THE MEMORY ADDRESS POINTER TO THE STREAM OF COMPRESSED INPUT DATA AND ALLOCATE A MEMORY BUFFER FOR THE DECOMPRESSED OUTPUT DATA.
264
266
END OF INPUT DATA ?
YES
268
DONE
NO
270
READ 1 BIT b FROM THE INPUT BUFFER.
274
b = 0 ?
YES
NO
276
COPY ONE BYTE FROM THE INPUT BUFFER AND WRITE IT TO THE OUTPUT BUFFER. ADVANCE THE INPUT BUFFER POINTER BY ONE BYTE.
278
GET THE MATCH LENGTH ML AND THE MATCH POSITION MP FROM THE INPUT BUFFER. COPY ML BYTES FROM FILE 1 AT POSITION MP TO THE OUTPUT BUFFER. ADVANCE THE INPUT BUFFER POINTER BY THE SIZES OF ML AND MP IN BYTES.
262

FIG. 19(b)

FIG. 20



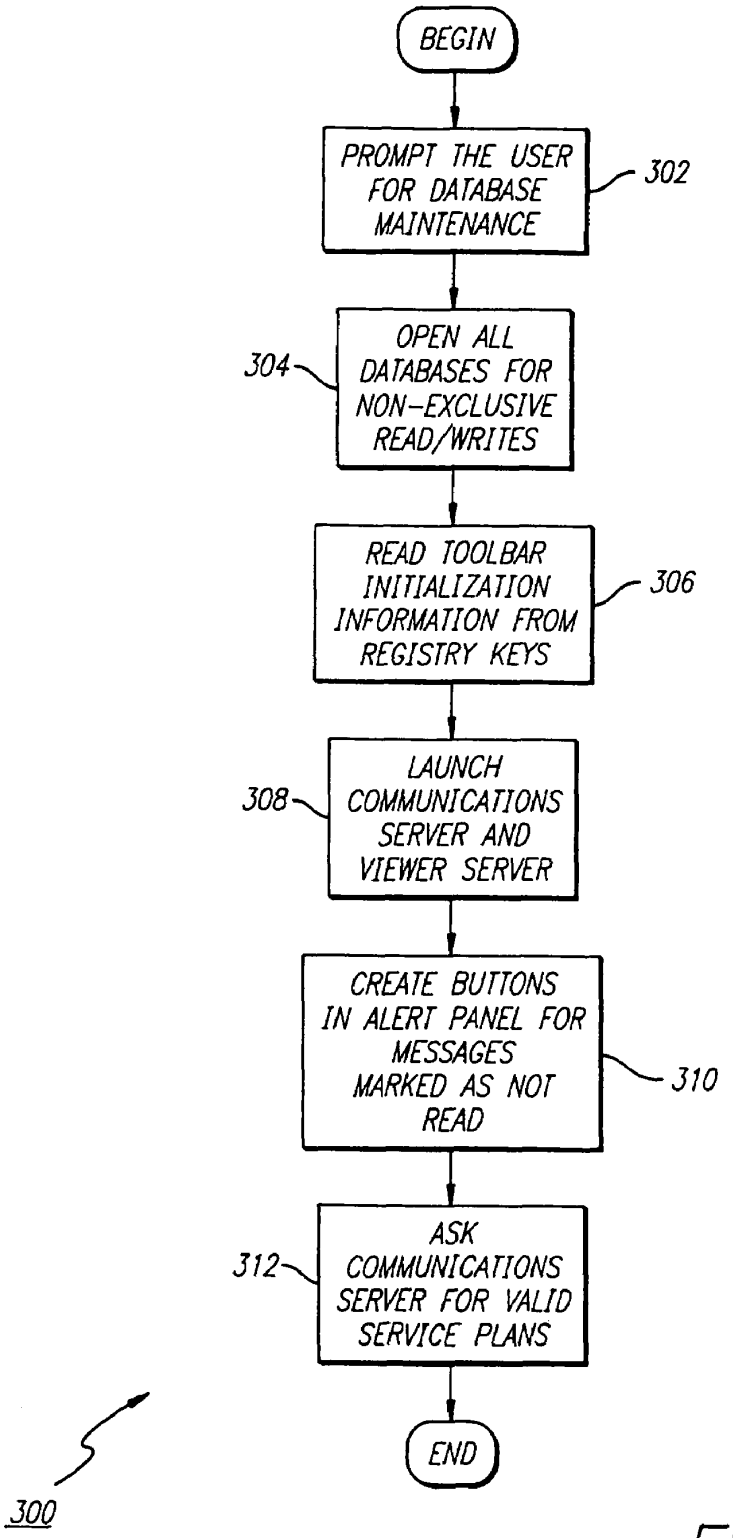

BEGIN
PROMPT THE USER FOR DATABASE MAINTENANCE
302
OPEN ALL DATABASES FOR NON-EXCLUSIVE READ/WRITES
304
READ TOOLBAR INITIALIZATION INFORMATION FROM REGISTRY KEYS
306
LAUNCH COMMUNICATIONS SERVER AND VIEWER SERVER
308
CREATE BUTTONS IN ALERT PANEL FOR MESSAGES MARKED AS NOT READ
310
ASK COMMUNICATIONS SERVER FOR VALID SERVICE PLANS
312
END
300

FIG. 21

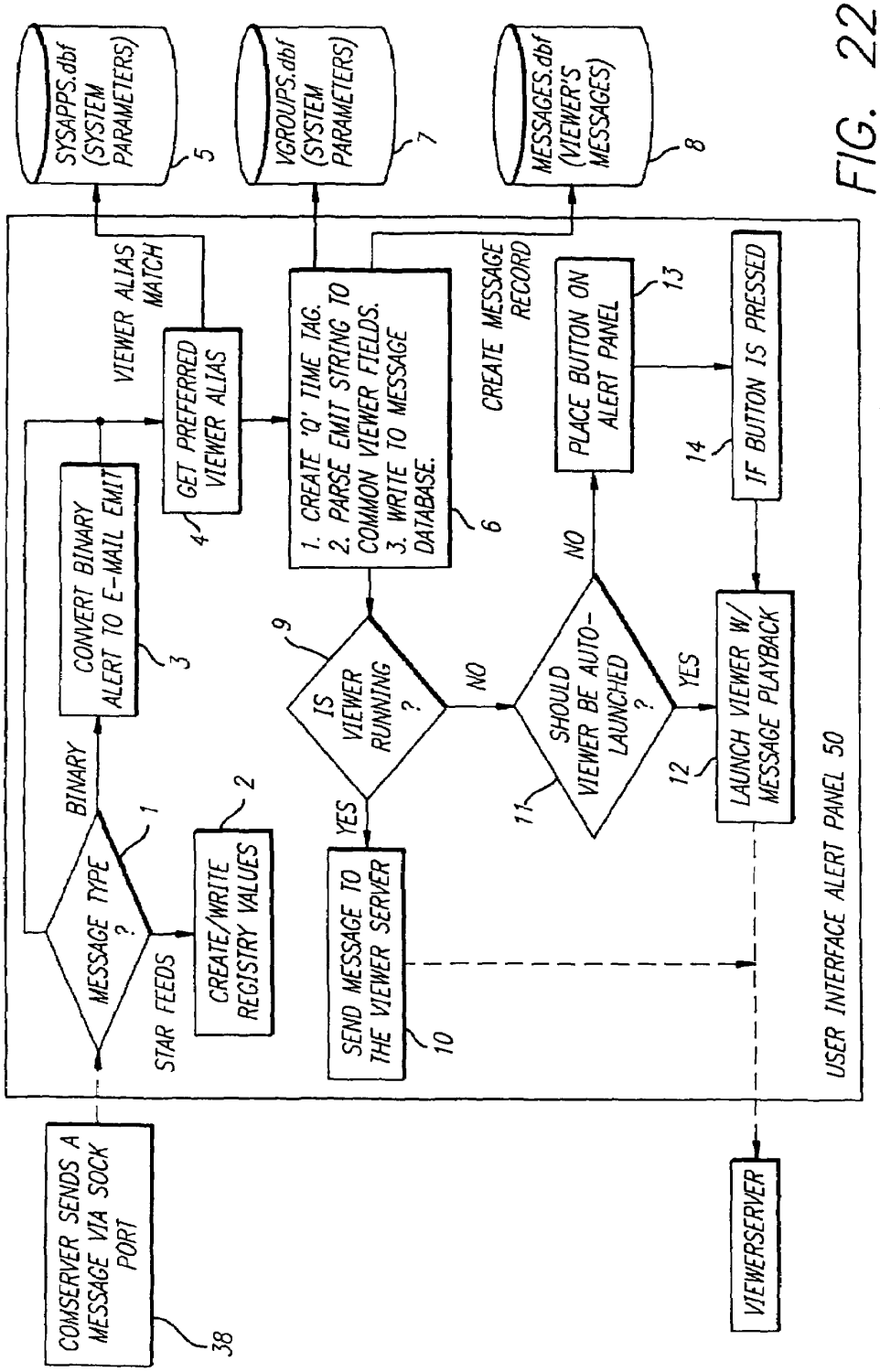

SYSAPPS.dbf (SYSTEM PARAMETERS)
5
VGROUPS.dbf (SYSTEM PARAMETERS)
7
MESSAGES.dbf (VIEWER'S MESSAGES)
8
VIEWER ALIAS MATCH
GET PREFERRED VIEWER ALIAS
4
1. CREATE 'Q' TIME TAG.
2. PARSE EMIT STRING TO COMMON VIEWER FIELDS.
3. WRITE TO MESSAGE DATABASE.
6
CREATE MESSAGE RECORD
PLACE BUTTON ON ALERT PANEL
13
IF BUTTON IS PRESSED
14
CONVERT BINARY ALERT TO E-MAIL EMIT
3
BINARY
MESSAGE TYPE ?
1
STAR FEEDS
CREATE/WRITE REGISTRY VALUES
2
IS VIEWER RUNNING ?
9
NO
YES
SHOULD VIEWER BE AUTO-LAUNCHED ?
11
NO
YES
SEND MESSAGE TO THE VIEWER SERVER
10
LAUNCH VIEWER W/ MESSAGE PLAYBACK
12
USER INTERFACE ALERT PANEL 50
COMSERVER SENDS A MESSAGE VIA SOCK PORT
38
VIEWERSERVER

FIG. 22

FIG. 23

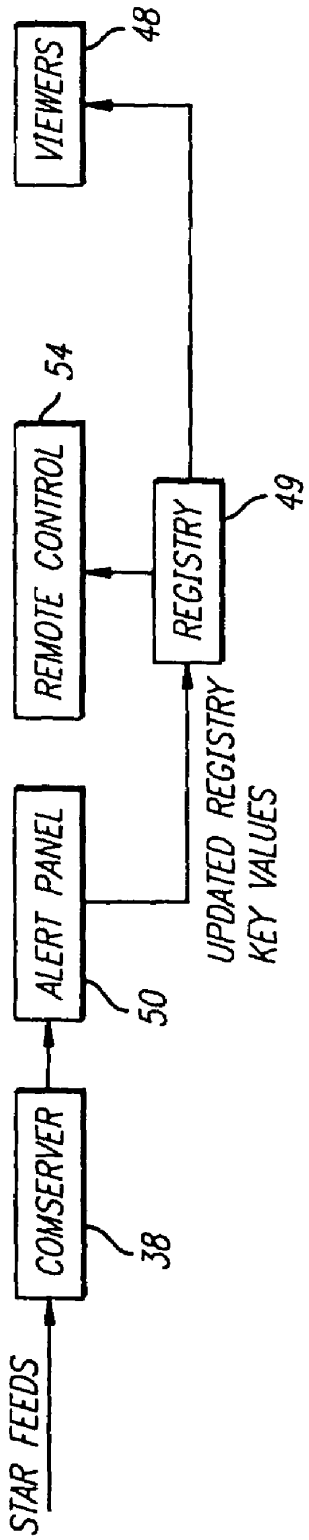

STAR FEEDS
COMSERVER
38
ALERT PANEL
50
UPDATED REGISTRY KEY VALUES
REMOTE CONTROL
54
REGISTRY
49
VIEWERS
48

FIG. 24(a)

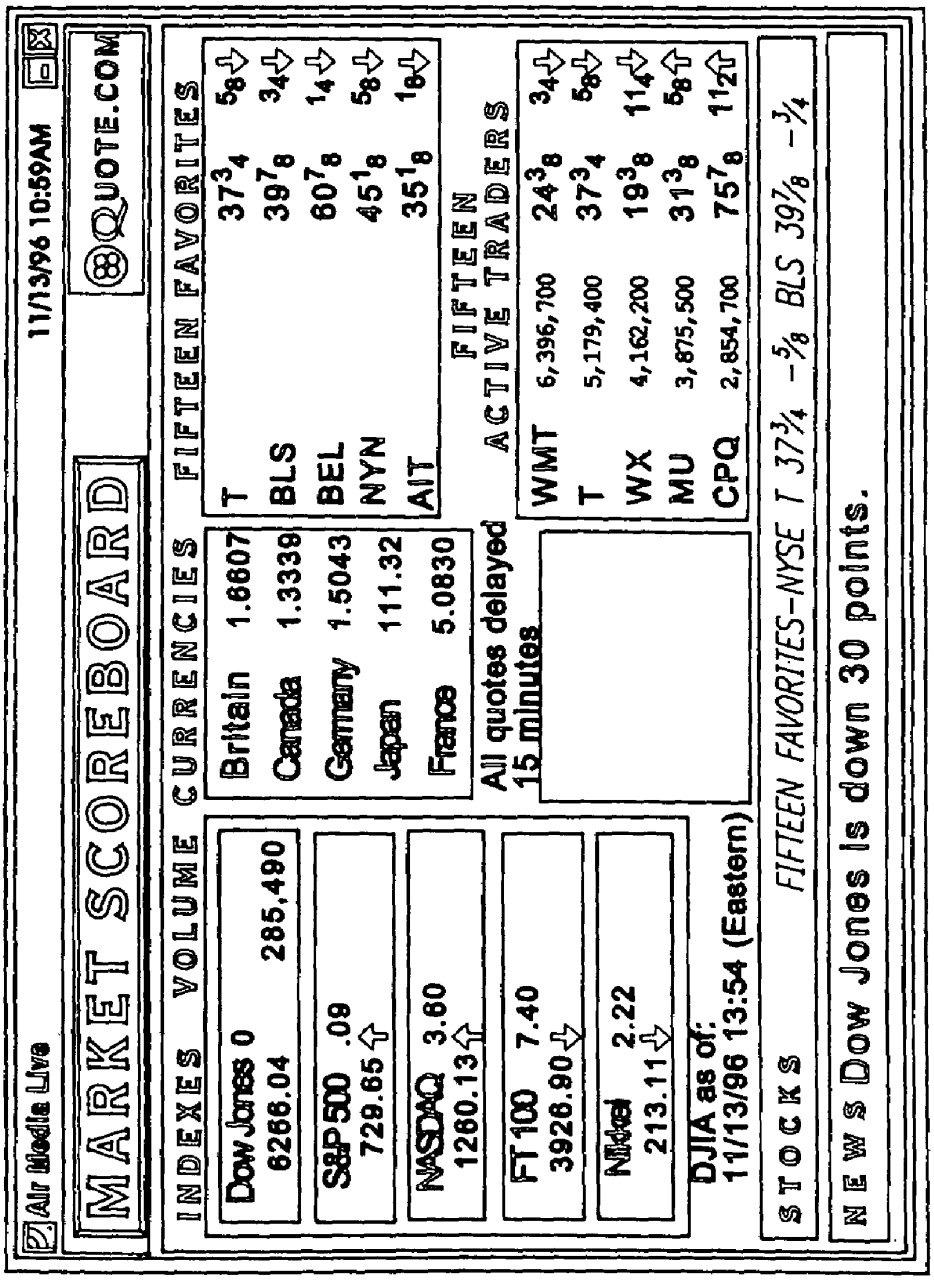

Air Media Live
11/13/96 10:59AM
MARKET SCOREBOARD
@QUOTE.COM
INDEXES
Dow Jones 0
6266.04
285,490
S&P 500 .09
729.65
NASDAQ 3.60
1260.13
FT 100 7.40
3926.90
Nikkei 2.22
213.11
DJIA as of:
11/13/96 13:54 (Eastern)
VOLUME
CURRENCIES
Britain 1.6607
Canada 1.3338
Germany 1.5043
Japan 111.32
France 5.0830
All quotes delayed 15 minutes
FIFTEEN FAVORITES
T 37 3/4 5/8
BLS 39 7/8 3/4
BEL 60 7/8 1/4
NYN 45 1/8 5/8
AIT 35 1/8 1/8
FIFTEEN ACTIVE TRADERS
WMT 6,396,700 24 3/8 3/4
T 5,179,400 37 3/4 5/8
WX 4,162,200 19 3/8 1/4
MU 3,875,500 31 3/8 5/8
CPQ 2,854,700 75 7/8 1 1/2
STOCKS
FIFTEEN FAVORITES-NYSE T 37 3/4 -5/8 BLS 39 7/8 -3/4
NEWS Dow Jones is down 30 points.

FIG. 24(b)

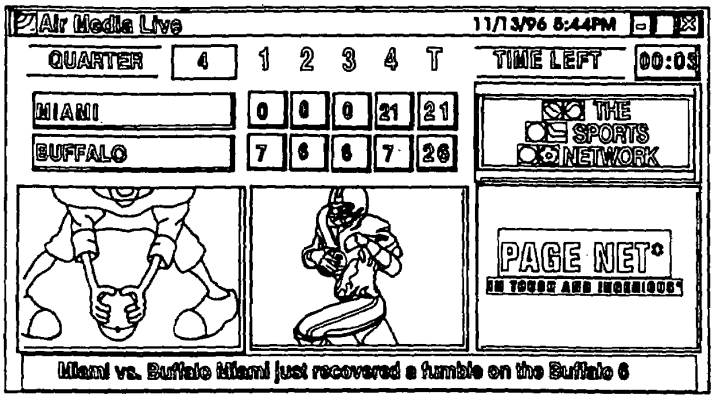


FIG. 24(c)

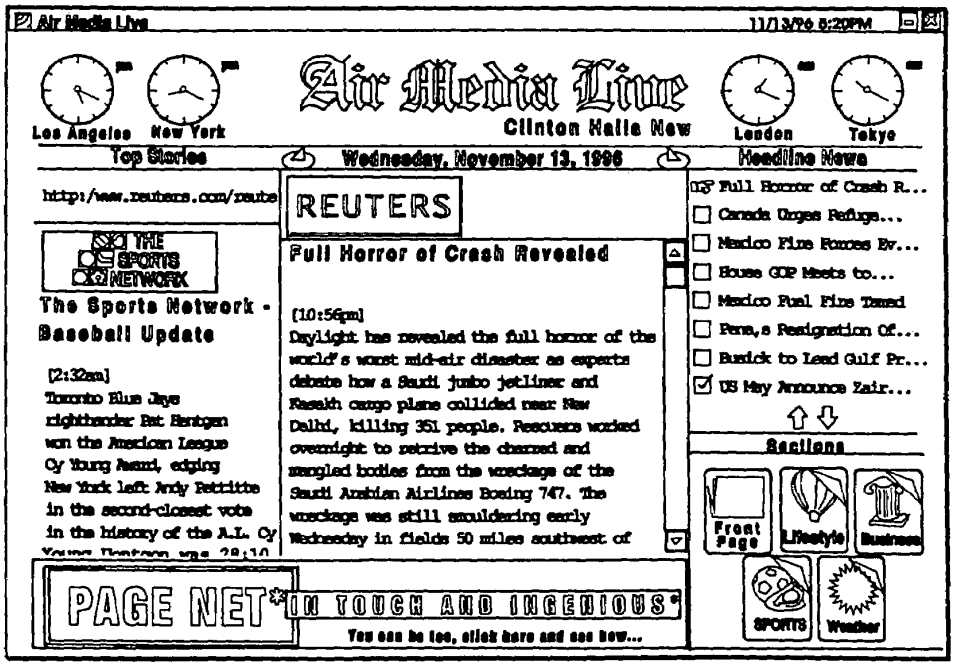
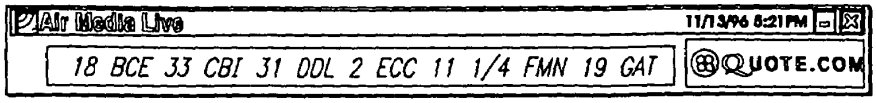


FIG. 24(d)



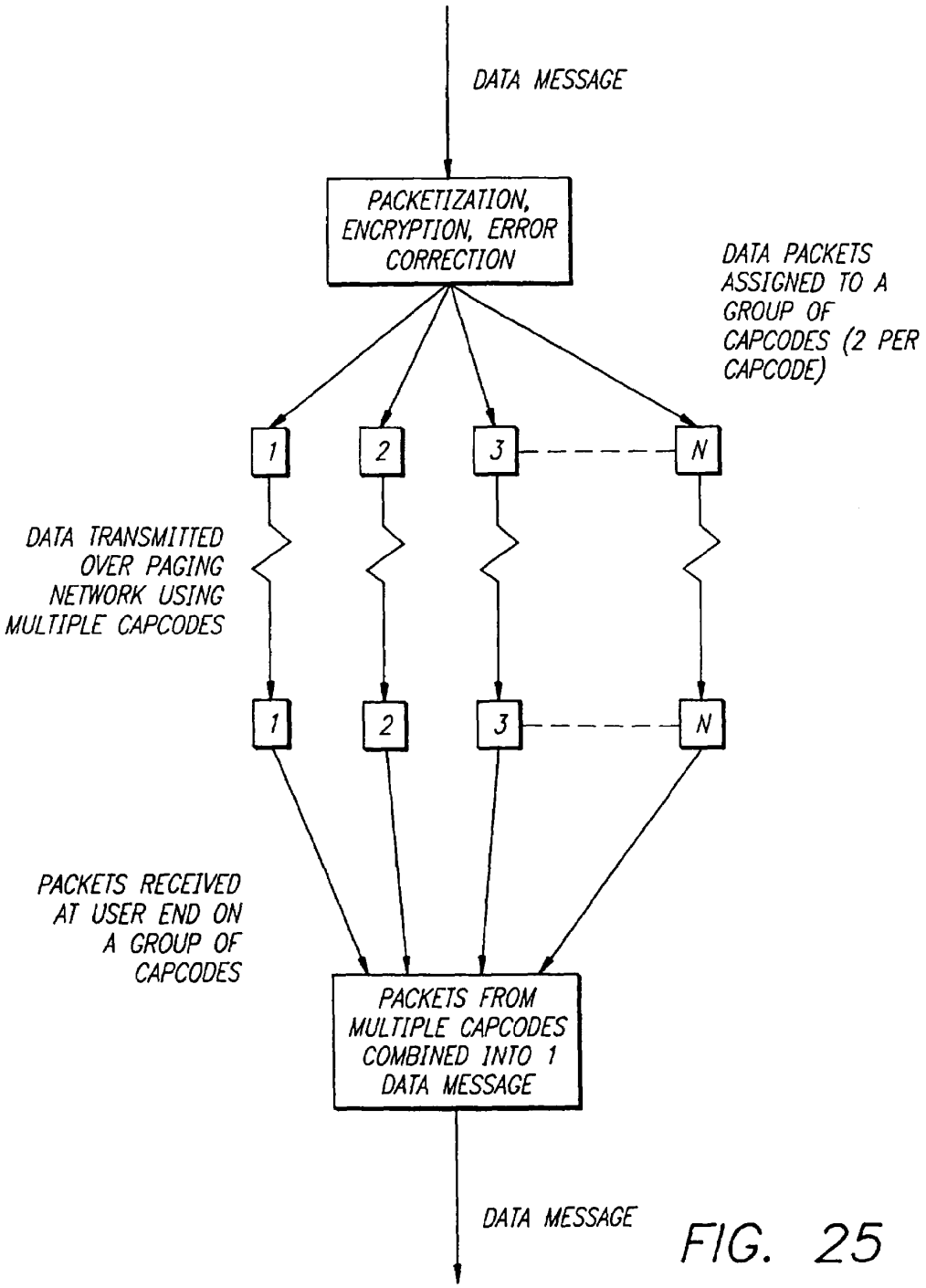

DATA MESSAGE
PACKETIZATION, ENCRYPTION, ERROR CORRECTION
DATA PACKETS ASSIGNED TO A GROUP OF CAPCODES (2 PER CAPCODE)
1
2
3
N
DATA TRANSMITTED OVER PAGING NETWORK USING MULTIPLE CAPCODES
1
2
3
N
PACKETS RECEIVED AT USER END ON A GROUP OF CAPCODES
PACKETS FROM MULTIPLE CAPCODES COMBINED INTO 1 DATA MESSAGE
DATA MESSAGE

FIG. 25

SYSTEM AND METHOD FOR TRANSMISSION OF DATA

This is a continuation of co-pending application Ser. No. 08/788,613 filed Jan. 24, 1997, which claims the benefit of U.S. Provisional Application No. 60/010,651, filed on Jan. 26, 1996; U.S. Provisional Application No. 60/014,341, filed on Mar. 29, 1996; U.S. Provisional Application No. 60/014,735, filed on Apr. 1, 1996; and U.S. Provisional Application No. 60/026,471, filed on Sep. 23, 1996.

REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 60/010,651, filed on Jan. 26, 1996; U.S. Provisional Application No. 60/014,341, filed on Mar. 29, 1996; U.S. Provisional Application No. 60/014,735, filed on Apr. 1, 1996; and U.S. Provisional Application No. 60/026,471, filed on Sep. 23, 1996.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to communication systems, and more particularly to both wired and non-wired data transmission communication systems.

2. Description of the Prior Art

Undoubtedly, computers, communications and information are driving forces in society today. The most significant advances in computers, communications and information have been in the areas of multimedia, wireless and on-line services, respectively. Each of these technologies have produced significant benefits and have effected nearly everyone's life in one way or another.

In particular, more than 100 million personal computers are equipped with multimedia hardware and software and nearly every new personal computer manufactured today is shipped with some form of multimedia. Multimedia has made the computer much more than a number crunching, word processing tool. Rather, multimedia has turned the computer into an indispensable educational, entertainment and information tool. By combining the realism of sound, graphics and video, multimedia applications have revolutionized the way individuals work, entertain and stay informed. Multimedia has also helped drive the computer industry to provide tools which can be used by the most novice computer user making computers almost as prevalent in our society as television or radios. Also, multimedia has driven manufacturers to build smaller and more powerful and mobile systems—leading a technological revolution not matched in our history.

Moreover, wireless communication technology has allowed individuals to be notified anywhere and anytime of information. Wherever an individual is, i.e. whether away from the office or in the car, he or she can be informed of information, such as new meeting schedules, dinner plans or even life or death emergencies.

Additionally, on-line services have revolutionized the distribution of information in our society by making available, to individuals throughout the world, endless amounts of information on every subject imaginable. The Internet and on-line services have brought together the world through a linkage of interconnected computer systems which can share information almost instantaneously.

These technologies suffer from numerous disadvantages, however. The benefits of wireless technology have only been utilized for personal messaging offering limited message lengths and have never been utilized as a computer peripheral, limiting the benefit of instant anytime anywhere to personal messages of limited length and value. Consequently, information which is sent is typically old and historic.

Moreover, while popular in education and business markets, multimedia has yet to find widespread application in the consumer market. While valuable in education and business circles, the average home user has little use for sound and full motion video. As the number of information providers continue to expand throughout the world, the amount of time and effort required to find information becomes exponentially longer.

In particular, the interface to on-line services is often difficult and intimidating to novice computer users. As a result, the benefit of this valuable source of information is thus not available to them. For example, despite the wealth of information available, users are required to search through the myriad of information, rather than having the information come to them. Consequently, information is often missed.

Furthermore, immediate notification of information is not available. For example, users who use computer related services, such as electronic mail (E-mail), do not receive instant notification when new mail is received. As a result, urgent E-mail will sit unnoticed in an electronic mailbox.

Another major problem is that data transmitted over existing wireless broadcast networks suffer from inevitable degradation. Traditional paging, being a one-way transmission, can use only forward error correction (FEC) on data packets. Many existing paging networks use Motorola's FLEX™, POCSAG or other wireless protocol's error correction/detection capabilities. Although these industry standard protocols provide error detection capabilities, many of them are not able to deal with burst errors or errors due to loss of synchronization. Since these protocols cannot correct all possible errors, some of the data packets will arrive with errors or simply get lost. In most cases, truncated packets and lost packets account for the vast majority of errors after decoding.

Similar problems exist with other forms of wireless communication systems as well.

What is needed therefore is a system and method for data transmission, which combines the benefits of multimedia, wireless and wired on-line services while addressing and overcoming their limitations.

SUMMARY OF THE INVENTION

The preceding and other shortcomings of prior art methods and systems are overcome by the present invention which provides a system and method for data communication connecting on-line networks with on-line and off-line computers. In particular, the present system provides for broadcast of up to the minute notification centric information thereby providing an instant call to action for users who are provided with the ability to instantaneously retrieve further detailed information. Throughout the day, various pieces of information happening around the world are currently available in a sender initiated paradigm where individuals have to seek out the information. In accordance with the present invention, the notification centric portions of that information that lives in an electronic medium is wirelessly broadcast on a nationwide basis to wireless receiving devices which are attached to personal computers or other computing devices. Upon receipt of the information at the personal computer, the user is notified through different

multimedia alerts that there is an incoming message. Wirelessly broadcasted URL's, associated with the data, are embedded in data packets and provide an automated wired or wireless connection back to the information source for obtaining detailed data.

The present invention unlike other wireless systems provides for a combination of broadcast, narrowcast and pointcast transmission. That is, information can be transmitted wirelessly to everyone (broadcast), to a subset of users (narrow cast) or to one user (pointcast). The present invention furthermore provides multiple viewers which listen to the airwaves and have the ability to filter against the broadcast with specific action. A message server provides different types of filters with the ability to parse data. Additionally, the message server is designed such that third party developers can write different types of multimedia viewers which can easily be downloaded to the user system and automatically registered with the message server. The viewers can thus be controlled through the interface of the present invention and multiple viewers and multiple controllers of such viewers can dynamically be added and controlled. Moreover, since the messages are encoded for multimedia events, the viewers of the present invention have capability to do different things for multimedia, such as sound, video, animation and so forth.

In operation, data parsed from a plurality of incoming data feeds from existing information sources is prepared for optimized wireless transmission and then transmitted nationwide to connected and non-connected computing devices thereby extending the reach of existing information sources, such as Internet and on-line services. On the user end, once data is received, a global communications server recombines, decodes, decrypts and decompresses the incoming data. When a complete data message is formed, the communications server sends a message to the user interface alert panel causing an animated icon to fly to the alert panel notifying a user that a new message has arrived. Upon clicking the icon, the appropriate viewer is launched. Users can then display the context of the data on their computers. Based on preferences set by the user with respect to sound, video and animation, users can be alerted to incoming messages. Wirelessly broadcasted URL's and on-line addresses, associated with the data, are embedded in multimedia viewers and provide an automated wired connection/link back to the information sources to obtain detailed information. Information, such as advertisements and promotional broadcasts, can be embedded in a multimedia viewer as well as automatically activated on a scheduled or triggered basis. Information is thus modified and updated instantaneously and wirelessly. Additional information services can be activated wirelessly through broadcast activation codes which can enable or disable services.

The present invention also provides a method based on Reed-Solomon code which is used to derive redundant data packets thereby minimizing redundancy, and maximizing flexibility and packet recovery ability.

In accordance with another embodiment of the invention, the information provided from the information sources and transmitted to the central broadcast server to be consolidated in accordance with the present invention and then transmitted wirelessly nationwide to personal computers and other computing devices can also be sent simultaneously via a wired connection to the same personal computers and computing devices having Internet/World Wide Web (WWW) access (direct or via on-line service providing Internet and Web access).

The foregoing and additional features and advantages of this invention will become apparent from the detailed description and accompanying drawing figures that follow. In the figures and written description, numerals indicate the various features of the invention, like numerals referring to like features throughout for both the drawing figures and the written description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is schematic diagram of a wireless communication network including information mirroring, selection addressing, bandwidth optimization, message server design and URL broadcast and hotlinks in accordance with the present invention;

FIG. **2** is a block diagram of the wireless communication network illustrated in FIG. **1**;

FIG. **3**(*a*) is a block diagram of the head-end high-level software architecture for communication over a paging network in accordance with the present invention;

FIG. **3**(*b*) is a block diagram of the head-end high-level software architecture for communication over a Vertical Blanking Interval (VBI) in accordance with the present invention;

FIG. **3**(*c*) is a block diagram of the head-end high-level software architecture for communication via satellite in accordance with the present invention;

FIG. **4** is a flow chart illustrating the transfer of data from the content manager to the wireless broadcast network;

FIG. **5** is a table illustrating the 8-bit binary format for information notification data blocks;

FIG. **6** is a table illustrating the 8-bit binary format for personal alert notification data blocks;

FIG. **7** is a table illustrating the 8-bit binary format for messages;

FIG. **8** is a table illustrating the 8-bit binary format for packets;

FIG. **9** is a table illustrating the 8-bit binary format for single packet data blocks;

FIG. **10** is a detailed schematic diagram of the message server design illustrated in FIG. **1**;

FIG. **11** is an illustration of a user remote interface for controlling the computer interface in accordance with the present invention;

FIG. **12** is a flow chart of an algorithm for extracting and processing the Internet source URL for messages broadcast over the wireless communication network illustrated in FIG. **1**;

FIG. **13** is a flow chart of an algorithm for generating and processing E-mail alerts in accordance with the present invention;

FIG. **14** is a flow chart of an algorithm for address and message filtering in accordance with the present invention;

FIG. **15** is a detailed flow chart of the algorithm illustrated in FIG. **14** for targeting data to a user utilizing physical and virtual addresses;

FIG. **16** is an illustration of the columns of a data group encoded by an encoder using a modified Reed-Solomon code for deriving parity-check packets;

FIG. **17** is a flow chart of an algorithm for deriving parity-check packets as illustrated in FIG. **16**;

FIG. **18**(*a*) is a flow chart of an algorithm for data compression which combines-Huffman compression and dictionary-based compression in accordance with the present invention;

FIG. **18**(*b*) is a flow chart of an algorithm for data decompression of the compression algorithm illustrated in FIG. **18**(*a*);

FIG. **19**(*a*) is a flow chart of an algorithm for data compression using differencing in accordance with the present invention;

FIG. **19**(*b*) is a flow chart of an algorithm for data decompression of the compression algorithm illustrated in FIG. **19**(*a*);

FIG. **20** is an illustration of a user interface alert panel as seen by a user;

FIG. **21** is a flow chart of an algorithm for implementing the initialization procedure for the user interface alert panel illustrated in FIG. **20**;

FIG. **22** is a flow chart of the algorithm for implementing process EMIT messages procedure for the user interface alert panel;

FIG. **23** is a block diagram illustrating how star feed messages are processed in accordance with the present invention; and

FIG. **24**(*a*) is a depiction of a market scoreboard viewer;

FIG. **24**(*b*) is a depiction of a football viewer;

FIG. **24**(*c*) is a depiction of a newspaper viewer;

FIG. **24**(*d*) is a depiction of a stock ticker viewer; and

FIG. **25** is a flow chart of the algorithm for

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Referring to FIG. **1**, a wireless communication system **10** including selection addressing **28**, connecting on-line information sources **12** with on- and off-line computers, such as personal computer **14**, is illustrated. In accordance with the present invention, the wireless communication system **10** turns a personal computer **14** or other computing device into a personal wireless information and messaging center. Although the present invention may be used to interact wirelessly with any computing device, for illustrative purposes, the present invention will be described and illustrated utilizing a personal computer **14**. One skilled in the art will recognize that computing devices may include consumer electronic devices including computing capabilities. The data/information which is transmitted in accordance with the present invention may be in the form of voice (audio), video, data or a combination thereof.

In particular, the present system provides for broadcast of up to the minute notification centric information thereby providing an instant call to action for users who are provided with the ability to instantaneously retrieve further detailed information. Throughout the day, various pieces of information happening around the world are currently available from information sources **12** in a sender initiated paradigm where users have to seek out the information. In accordance with the present invention, the notification centric portions of that information that lives in an electronic medium is wirelessly broadcast on a nationwide basis to wireless receiving devices **32** which are connected to personal computers **14** or other computing devices. Upon receipt of the information at the personal computer **14**, the user is notified through different multimedia viewers **20** that there is an incoming message. The message can be of something that is happening at the present moment anywhere around the world. Included with the broadcast that is wirelessly sent to the user is the Internet address and location of the detail of that message. By clicking on a button within the multimedia viewer **20** that notified the user that a message came in, the present invention will automatically make a wired connection to the information source **12** utilizing the user's preferred on-line browser which will direct the user to the particular location on the Internet service provider where the user can receive detailed information.

The information source **12** may be a private Internet provider such as Quotecom, corporate Internet provider or an on-line service provider such as America On-Line, Compuserve, Prodigy, the Microsoft Network, and the like. A browser is a known software tool used to access the information source **12** via the providers. Known browser software includes Netscape, Netscape Navigator, Microsoft Explorer, Mosaic and the like. The present invention is designed to operate with any of these known or developing web browsers.

Additionally, the present invention unlike other wireless systems provides for a combination of broadcast, narrowcast and pointcast transmission. That is, information can be transmitted from a central broadcast server **34** wirelessly to everyone (broadcast), to a subset of users (narrow cast) or to one user (pointcast). One skilled in the art will recognize that the central broadcast server **34** operates effectively as a network operations center. The present invention furthermore provides multiple viewers **20** which listen to the airwaves and have the ability to filter against the broadcast with specific action. A message server provides different types of filters with the ability to parse data. The filters control which messages are handled by a particular viewer **20**. Additionally, the message server is designed such that third party developers can write different types of multimedia viewers **20** which can easily be downloaded to the user system and automatically registered with the message server. The viewers can thus be controlled through the interface of the present invention and multiple viewers **20** and multiple controllers of such viewers can dynamically be added and controlled. Moreover, since the signals are encoded for multimedia events, the viewers **20** of the present invention have capability to utilize multimedia capability.

As will be described in detail below, data parsed from a plurality of incoming data feeds **16** from existing information sources **12** is wirelessly transmitted by the central broadcast server **34** nationwide through a commercial wireless carrier **36** to connected and non-connected computing devices **14** thereby extending the reach of existing information sources **12**, such as Internet and on-line services. On the user end, once data is received, the message server design **18** recombines, decodes, and decompresses the incoming data. When a complete data message is formed, a communications server **38** in the message server design **18** notifies a user interface alert panel **50** which presents an icon, which when clicked, notifies appropriate viewers **20** which are registered to display particular data. Users can then display the context of the data on their computers **14**. Based on preferences set by the user with respect to sound, video and animation, users can be alerted to incoming messages. Wirelessly broadcasted Uniform Resource Locator's (URL's) **22**, associated with the data, are embedded in multimedia data packets and provide an automated wired or wireless connection or link **22** back to the information source **12** for obtaining detailed data. A network path to an information source **12** is identified by the URL having a known syntax for defining a network. Data, such as advertisements and promotional broadcasts, can thus be embedded in a multimedia viewer as well as automatically activated on a scheduled or triggered event. Moreover, an advantage of the present invention is that data can be modified and updated instantaneously and wirelessly. Additional services can be activated wirelessly and existing

services disabled through broadcast activation codes which can enable or disable addresses thus turning services on and off.

Another advantage of the present invention is that a remote computer **14** can receive information instantly—even while it is off-line (i.e. not connected to the Internet or some other on-line service). Thus, a user has the ability to receive "on-line" information even when the user is "off-line". In accordance with another advantage of the present invention, a user can simultaneously, using the same computer **14**, work on a conventional application, such as a spreadsheet or word processing program, and monitor information which is being transmitted wirelessly.

The user computer **14** of the present invention includes a microprocessor connected to a system bus and supported by read only memory (ROM) and random access memory (RAM) which are also coupled to the system bus. The RAM is the main memory into which the operating system and application programs are loaded. The RAM may also support Internet services, including but not limited to the file transfer protocol (FTP) and simple mail transfer protocol (SMTP) or E-mail. A CD ROM, which is optional, is connected to the system bus and is used to store a large amount of data. Various I/O controllers, including but not limited to the video controller, audio controller and mouse controller may also be connected to the system bus. A modem enables communication over a network to other information sources or computers. The operating system of the computer may be Windows '95 (™), WINDOWS NT (™) or any other known and available operating system.

In the preferred embodiment of the invention, the user computer has a 486 PC or higher processor, 16 MB of RAM, Windows 95 operating system, at least 20 MB available on hard disk for storing the executable programs, support files and databases, sound and video cards, monitor, mouse or other equivalent pointing device, an ISA slot for receiving an internal 16 Bit ISA receiver card, or serial port. The receiver card installed in the ISA slot in the user computer **14** interacts with the wireless receiver **32**. The wireless receiver may also be accessed via the serial port. One skilled in the art will recognize that the present invention is not limited to the particular configuration discussed above. Rather, the present invention may be implemented on other computer systems and configurations, including but not limited to Macintosh or Unix computers, televisions, telephones, appliances and so forth.

The wireless communication system **10** of the present invention includes information mirroring **26**, selection addressing **28**, bandwidth optimization **30**, receiving means **32**, message server design **18** and URL broadcast and hot links **22**.

Information Mirroring

As is illustrated in FIG. **1**, information sources **12**, such as the Internet, on-line services and other information sources, provide data feeds, including real time data feeds, to a network of servers **33** in the central broadcast server **34**. These data feeds, once they have been parsed, compressed, encrypted and packetized based on feed and data type, provide the basis for outgoing broadcast sent immediately or on a scheduled basis. The data feeds include but are not limited to, electronic mail (E-mail) and other personal alert notifications, news, sports, and financial stories, premium and special event feeds, advertisements/promotions, graphics, sounds, and scheduled updates. The data feeds generated by the information sources **12** are in digital form and divided into one or more data packets.

Referring to FIG. **2**, a block diagram **100** of the software architecture for communications between the information sources **12** and central broadcast server **34** prior to transmission to users is illustrated. Referring to FIGS. **1** and **2**, information sources **12** provide data feeds to the central broadcast server **34** which performs selection, scheduling and addressing **28**. In particular, real time data feeds from the Internet **13** in the information source **12** are provided to a network of servers **33** in the central broadcast server **34**, such as the FTP server **102** and the SMTP server **104** illustrated in FIG. **2**. The data, which can include but is not limited to stock quotes, weather, lotto, E-mail, etc. is then respectively parsed by parsers, such as the stock quote parser **106**, weather parser **108**, lotto parser **110** and mail parser **112**, and then transmitted to the content manager **114** located in the central broadcast server **34**. Data is also provided to the central broadcast server **34** by sources **116** which provide software and hardware for a mainstream connection, via FM radio, with the source **118**. This kind of data is also parsed by various parsers, such as Reuters **120**, COMDEX **122** and TSN **126**. The present invention is not limited to the information sources or parsers described herein. Rather, any type of information source and corresponding parser may be used. The parsed data is then transmitted to the content manager **114**.

The central broadcast server **34** also provides a registration/subscription processor **128** via the World Wide Web (WWW) database or alternatively, other means. The WWW is a collection of servers of the Internet that utilizes the Hypertext Transfer Protocol (HTTP). Through the registration/subscription processor **112**, a user can register and subscribe to receive broadcasts provided by the present invention via the user computer **14**. The information provided by the user is transmitted to a subscriber database **130** which is utilized by the central broadcast server to determine which subscribers receive which types of content.

Referring to FIG. **2**, the content manager **114** determines how different types of information are handled. In particular, it specifies priorities for different types of information, and decides which pieces of information will be transmitted and which will be rejected. It also applies scheduling rules **132** to determine when messages should be scheduled to be transmitted to the user. In addition, the content manager **114** is responsible for determining what format the information should be sent in, what compression method to use, and who information should be sent to. The compression method and format are determined by the type of information. When and if the information should be sent, who it should be sent to, and the priority of the information are determined based on the type of information, the time of day, the day of the week, and the specific date. So, for example, these rules could be used to specify that certain news feeds go to premium subscribers only except during certain hours of the day. Or it could be used to say that stock quotes are a low priority during hours the stock exchanges are closed, on Saturday and Sunday, and on market holidays. The content manager **114** also has the ability to detect and remove duplicate messages.

The content manager **114** communicates with the information gateway **134** which is responsible for resolving logical information inside the system to physical information needed for the wireless gateway **136**. In particular, the information gateway's **114** duties include, but are not limited to: resolving service identifications (ids) and addresses from a logical address and managing the content budget rules **138** to ensure that the total content quota is not exceeded. The content budget is based on the number of

bytes which may be transmitted in an hour. The algorithm used manages the budget by evaluating the total bytes allowed in the hour, the priority of the information, the total bytes sent so far in the hour and the maximum instantaneous rate at which information may be sent to determine whether to send a message. The goal being to ensure that sending low priority information early in the hour will not prevent high priority information from being sent late in the hour. Since the input to the information gateway **134** is primarily logical, it could be exchanged for an information gateway **134** which could send the information to be transmitted over another medium, such as the Internet. In addition, the information gateway **134** enforces priorities to ensure that higher priority information is sent before lower priority information.

In accordance with the present invention, the wireless gateway **136** prepares data blocks for transmission over a wireless broadcast network, including but not limited to transmission via a paging network (FIG. **3**(*a*)), Vertical Blanking Interval (VBI) (FIG. **3**(*b*)) or satellite (FIG. **3**(*c*)), narrow and broadband PCS, GSM, VSB television, cellular and other developing wireless technologies. One skilled in the art will recognize that the data blocks can be transmitted by a digital, analog or FM subcarrier. The present invention is designed to operate with any of the above known or developing transmission networks.

In particular, referring to FIG. **3**(*a*), a block diagram of the head-end high-level software architecture for transmission over a paging network **37** in accordance with the present invention is illustrated. The paging network **37** allows information to be transmitted over paging frequencies to paging receivers **32** which are connected to a user computer **14**. The wireless gateway **136** transmits information to a plurality of paging terminals **39** which transmit the information to paging transmitters **41**. In turn, the paging transmitters **41** transmit the information to receivers **32**, which only receive information having specific addresses as noted in detail below. The paging terminals **39** and transmitters **41** are preferably located nationwide to provide information access to all users. Paging terminals communicate with one another via the Inter and Intra System Protocol (TNPP). Information is typically received at a paging terminal **39** and eventually transmitted to a separate paging transmitter **41** through a radio control link. One skilled in the art will recognize that the link between the paging terminal **39** and the radio controlled link to the paging transmitters **41** can be a satellite link. In particular, information from the paging terminal **39** is transmitted to a satellite via an uplink. The information is then modulated onto the carrier of the radio control link for transmission to the paging transmitters **41**. One skilled in the art will recognize that any commercial paging carrier which can transmit information wirelessly can be utilized in accordance with the present invention.

Referring to FIG. **25**, in accordance with an advantage of the present invention, to overcome the paging network limitation on the amount of data that may be sent to a single address, or capcode in paging terminology, messages are sent on groups of pooled addresses and received at the user end on corresponding pools of addresses. Thus, information is multiplexed over multiple addresses but is reassembled at the user end as if sent to a single address. This allows utilization of available network bandwidth that could not be utilized with a single address.

In particular, the data to be transmitted over a paging network **37**, such as that illustrated in FIG. **3**(*a*), first goes through a process of packetization, encryption, compression and forward error correction methods, as described in detail below. The output of this process is 1 to n number of data packets, depending on the level of error correction, and type of compression/encryption applied to the data. The paging network addresses an individual or group by broadcasting on a particular address or capcode. By programming a paging device to listen to the individual capcode, the device is then capable of receiving the particular message. The inherent problem with the FLEX protocol which is used by major paging carriers is that there is a limit to the number of messages which can be sent to any one particular capcode at a time. In accordance with FLEX encoding rules, only 2 messages per capcode can exist at any one time in a particular FLEX frame, which is approximately 1.875 seconds. A typical data message sent over a paging carrier is broken down into 16 individual data packets. If only one capcode is transmitted, it would take (16 packets/message) *(½ frame/packet)*(1.875 sec/frame)=15 seconds/message. This is a relatively slow rate and only utilizes a small fraction of the FLEX frame. A FLEX frame is capable of transmitting on four different phases or channels at a particular time, hosting several messages per frame. The FLEX encoding rules only specify the maximum messages per capcode frame, but there is no limit set to the number of capcodes.

Referring to FIG. **25**, in accordance with an advantage of the present invention, the data message is multiplexed over a number of capcodes (i.e. uses multiple capcodes to send one message). Using the previous example, the present invention would send the 16 packets of the data message to 8 different capcodes. Thus, it would take (16 packets/message)*(½ capcodes/message)*(⅛ frame/capcode)*(1.875 sec/frame)=1.875 sec/message. The data rate is approximately 8 times faster and fully utilizes the FLEX frame. Although the relationship between the capcode and the packet id number is arbitrary, the server software assigns the packets in a "round-robin" fashion, assigning packets 1–8 to capcodes 1–8, respectively, and packets 9–16 to capcodes 1–8, respectively.

At the user end, the software decodes the messages in a similar manner. A user would subscribe to a particular service, which essentially translates into a set of capcodes which are programmed into the receiving device **32** (FIG. **3**(*a*)). The receiving device **32** then receives the packets which are transmitted to that particular set of capcodes. Thus, for example, the user software would initialize the receiving device **32** with the same 8 capcodes as on the transmit side. The packets received with those 8 capcodes would then be combined into the original data message.

Referring to FIG. **3**(*b*), a block diagram of the head-end head-level software architecture for transmitting data over a Vertical Blanking Interval (VBI) of a television signal **135** in accordance with the present invention is illustrated. The wireless gateway **136** transmits information through a standard RS232 interface **137** and modem **139**, which through a telephone line **141** communicates with a modem **143** at a television network broadcast transmission site. The information is forwarded from the modem **139** to a VBI encoder **145** which combines the VBI data with a standard television video signal **153**. The encoded data is then forwarded to a satellite uplink transmitter **147** which transmits the television signal **153** to a satellite antenna/receiver **151** via satellite **149**. A VBI decoder **155** then extracts the data from the television video signal and performs physical device addressing. The VBI encoder and decoder may be any commercially available encoder and decoder designed for VBI transmission. The communications server **38** is modi-

fied to interface with the driver for the VBI decoder **155** which is provided by the manufacturer of the decoder hardware.

Referring to FIG. **3**(*c*), a block diagram of the head-end high-level software architecture for transmission via a satellite-based system **157** in accordance with the present invention is illustrated. The wireless gateway **136** transmits information through a standard RS232 interface **159** and modem **161**, which through a telephone line **163** communicates with a satellite modem **165**. The information is forwarded from the satellite modem **165** to an uplink transmitter **167** which transmits the data to a satellite dish or antenna **171** via satellite **169**. In particular, the satellite dish or antenna **171** receives the RF signal from the satellite **169**. A standard satellite receiver PC card **32** converts the RF signal into PC compatible data. The communications server **38** is modified to interface with the receiver card driver provided by the manufacturer of the receiver PC card **32** to receive data from a standard satellite data receiver.

The content manager **114** utilizes a content programming station **140** to control the content of programming. The content programming station **140** allows a programming manager (not shown) to alter the rules used by the content manager **114**. The content programming station **140** will also be used to review and alter content schedules and schedule ad hoc messages. For example, if there are news feeds which must be manually filtered to locate acceptable content, the news feeds would appear at the content programming station **140** for the program manager to review.

A flowchart illustrating the algorithm for implementing the processing of data prior to transmission is illustrated in FIG. **4**. Information from the content manager is initially applied to the information gateway **134** (step **115**) which resolves its logical destination address to a physical wireless address based on information in the subscriber database (step **117**). The data is then applied to the wireless gateway **136** which creates the data block, performs packetization, compression, encryption, and so forth to prepare the data block for transmission over the wireless broadcast network (step **119**). The data block is then transmitted over the wireless broadcast network by the commercial carrier **26**.

Information Mirroring

Data is transmitted from an information source to the central broadcast server **34** as discrete message blocks using E-mail or a well-known high speed protocol such as the Transport Control Protocol/Internet Protocol (TCP/IP). (See Corner, D.E., "Internetworking with TCP/IP, Vol. 1: Principles, Protocols, and Architecture, Second Edition", Prentice Hall, Englewood Cliffs, N.J. (1991).) In particular, each data packet transmitted by the information source **12** includes a header, packet data and information to ensure proper transmission to the central broadcast server **34**. Additionally, an error correction code is typically added to each packet prior to transmission. The data block is broken down into messages and messages are broken into packets. Each packet is accompanied by a message id and a sequence number. All packets belonging to the same message contain the same message id. A sequence number denotes the position of the packet inside the group. Some packets will also carry the total number of packets belonging to the message. Each packet header includes the following: packet type (4 bits), total packets included (1 bit), message identifier (11 bits) and packet sequence number (1 byte).

Although the preferred transmission protocol from information source to the central broadcast server **34** is TCP/IP, it will be appreciated by those skilled in the art that many other standard or application specific protocols, such as the Open Systems Connection (OSI), may be used as well.

The information sources **12** thus provide the information basis for outgoing broadcast transmitted by the central broadcast server **34** through nationwide wireless broadcast network immediately or on a scheduled basis to both on- and off-line computers **14**. When the central broadcast server **34** receives the data packets from the information source **12**, it pre-processes the data packets and wirelessly transmits the data packets to both on- and off-line computers **14**. Consequently, computer users receive real time notifications of information, including but not limited to breaking headlines, sport scores, weather disasters, financial information and even the arrival of new electronic mail. It will be understood by one skilled in the art that the information consolidated at the central broadcast server **34** may additionally be sent via a wired connection to a personal computer or computing device.

Referring to FIG. **1**, information sources **12** also receive requests from remote personal computers **14** or other computing devices for more detailed information. Wirelessly transmitted URL's **22**, associated with incoming information, are embedded in the broadcast message from the central broadcast server **34**, which is displayed in the multimedia viewers **20** and provide an automated direct wired or wireless line connection **22** back to the information source **12** such that detailed data may be automatically downloaded to the user's computer **14**.

As illustrated in FIG. **1**, data generated by the information sources **12** is fed to the central broadcast server **34**, which processes the incoming data packets by parsing the feeds **16** against specific filters, encoding the data and creating desired broadcast feeds for wireless transmission as described in detail below.

Selection Addressing

As is illustrated in FIG. **1**, the data packets generated by the information sources **12** are transmitted to the central broadcast server **34**, where they are internally processed before being wirelessly transmitted through a carrier **36** to one or more personal computers **14** or other computing sources via selective receivers **32**. When the packets arrive at a user receiver **32**, they are reassembled by the communications server **38** in the message server design **18** into the original message. One skilled in the art will recognize that the carrier can be a local, regional, nationwide or worldwide carrier.

Information from the content providers is first formatted according to the proprietary EMIT protocol before being prepared for transmission over the wireless broadcast network. In the EMIT format, information feeds include a number of parts, each separated by the tilde (~) character. Each part begins with a tag (keyword) followed by an equal sign (=) and the data for that part. The tag determines how to interpret the data in that part. Most tags are single characters to minimize network traffic. Also, tags are case sensitive to allow more single character tags. Tags 1–5 are reserved for information category and sub categories. Other tags generally are derived from the first character in a name, such as, H for headline. An example of an EMIT format information feed is provided below:

1=*S*~2=*B*~*H*=Dodgers Win World Series~*D*=Nov. 2, 1989 9:30 pm

where the primary category (1=) is S (which stands for sports), the first sub category (2=) is B (which stands for

baseball), the news headline (H=) associated with this feed is Dodgers Win World Series, and the date/time (D=) is Nov. 2, 1989 9:30 pm.

Data from the information sources is packed into 8-bit binary format data blocks in the central broadcast server **34**. The two basic data block types are illustrated in FIGS. **5** and **6**. In particular, FIG. **5** defines the 8-bit binary format for "information" notification data blocks while FIG. **6** defines the 8-bit binary format for "personal alert" notification data blocks. Information notification data blocks, illustrated in FIG. **5**, contain general information targeted to all users, including but not limited to news headlines and stories, sports scores, financial market data, and so forth. Personal alert notifications, illustrated in FIG. **6**, contain alert information targeted to specific users, including but not limited to notifications regarding E-mail arrival, stock prices reaching specified values, Internet telephone calls, chats or meeting notices.

Prior to transmission, at the central broadcast server **34**, the data packets are encoded using a protocol suitable for the transmission of information. Data blocks are packetized for transmission over the wireless broadcast network using transmission protocols.

In the preferred embodiment, which uses the paging network as the means of wireless broadcast or transmission, Motorola's FLEX (™) protocol is utilized. Alternatively, other protocols, such as traditional Post Office Code Standardization Advisory Group (POCSAG) protocol, Motorola's REFLEX™ and INFLEXION™, AT&T's protocol derived from CDPD or other developing protocols may be used as well. Most wireless transmission protocols, including POCSAG, provide random error correction as well as error detection capabilities, thereby adding error detection and correction capabilities to the information link.

Depending on the type and amount of information contained, a data block may be enclosed in a single packet, or parceled into messages which in turn are subdivided into one or more packets. The message format protocol is illustrated in FIG. **7**. Large data blocks are divided into messages for efficiency in transmission. The data block header is sent as part of the message. The header type item is used to distinguish between the data block and message headers.

The basic unit of transmission is the packet. Each packet includes a header and contents. The information contained in the header defines the packet's contents. In accordance with the present invention and as illustrated in FIGS. **8** and **9**, two basic types of packets in the 8-bit binary format are utilized. The first 4 bits in the packet define the packet type. Standard packets are used for transmitting data blocks too large for a single packet. In this case, each packet contains the ID of the message to which it belongs, and the packet number denoting the position of the packet inside the message. This allows the software at the user receiving end to rebuild the original messages and data block from the individual packets. Prior to transmitting the packets in a message, forward error correction packets are added as described in detail below. The single packet data block is used where the complete data block can fit into one packet. In this case, the packet header is followed by the data block header and data block contents. Binary alert packets are a special case of the single packet data block and are reserved for the predefined alert notifications described above.

At the receiving end, as described in detail below, the reverse of the data packetization process described above occurs. In the case of multiple packet data blocks, individual packets are combined to form messages based on packet sequence number and message ID included in the packet header. Error correction is performed as required. Individual messages are then combined to form data blocks based on message sequence number and data block ID in the message header.

The central broadcast server **34** performs the following processes on the incoming data: compression, forward error correction, encryption, packetization and wireless broadcast format encoding. After internal processing, the formatted data packets are queued for wireless transmission to their respective destinations which could include one or more remote personal computers **14** or computing devices. In accordance with the present invention, the formatted data packets are either immediately wirelessly transmitted to their respective destinations or stored into available memory for subsequent wireless transmission to their respective destinations. For the latter, i.e. delayed transmission, the central broadcast server **34** includes a non-volatile storage medium for longer term storage of data programmed for subsequent wireless transmission to one or more users.

a. Encryption

To minimize unauthorized use of broadcast data, the data is encrypted prior to wireless transmission so that anyone surreptitiously coming into possession of the data would not be able to convert the data to clear form for use. The user software is designed such that it can properly decrypt the data once it is received on the user end. In the preferred embodiment, data is encrypted using the Data Encryption Standard (DES) algorithm. (See "Data Encryption Standard", Federal Information Processing Standards Publication No. 46, January 1977; "DES Modes of Operation", Federal Information Processing Standards Publication No. 81, December 1980.) Alternatively, other known reversible encryption algorithms may be used for data encryption.

Prior to transmission, the data is also encoded with a data signature. The National Institute of Standards in Technology (NIST) Digital Signature Standard (DSS) algorithm is preferably used for signature verification. Alternatively, other known methods of signature verification may be used. (See "Announcing a Digital Signature Standard", Federal Information Processing Standards Publication, Draft 19 Aug. 1991, front page and pp. 1–4; "Specifications for a Digital Signature Standard (DSS)", Federal Information Processing Standards Publication, Draft 19 Aug. 1991, pp. 1–11.) In operation, DSS is used to authenticate the origin of the data (i.e., establish the identity of the signer) and to check the integrity of the data (i.e., confirm that the data has not been altered after it has been signed).

b. Forward Error Correction

To compensate for transmission errors during wireless broadcast, forward error correction algorithms, such as Fire Codes and various forms of Reed-Solomon Codes, are applied to the outgoing data packets. Reed-Solomon and other coding systems are discussed in, for example, Theory and Practice of Error Control Codes, Richard E. Blahut, Addison Wesley, 1983, at pages 174 and 175. A feature of the forward error correction used here is that the ideal packet size is dynamically computed so as to minimize total over the air size while maximizing error correcting capability.

C. Derivation of Redundant Data Packets

Referring to FIGS. **16** and **17**, as shown in detail below, the columns of a data group **150** are encoded by an encoder using a Reed-Solomon (RS) code for deriving parity-check packets **152** i.e. redundant packets. In accordance with the present invention, the RS code, conventionally used for error detection and correction, is utilized in a novel manner with respect to reconstructing packets that arrived with errors. As described in detail above, the data transmission in the

present invention is based on a wireless protocol, such as Motorola's FLEX™ protocol or the POCSAG protocol which provides error detection capabilities. However, these protocols cannot compensate for burst errors or errors due to loss of synchronization, which often results in truncated or lost packets at the receiver. In the present invention, each information packet **154** which arrives with an error or errors is considered a lost packet. Therefore, an information packet **154** either arrives without error or is lost.

The present invention is thus directed to compensating for such truncated or lost information packets by sending redundant packets. Instead of sending each packet twice or thrice, the present invention utilizes a modified RS code in a novel manner to transmit packets with redundancy as explained in detail below. For example, for a message which is split into 200 information packets sent over a paging network with a packet loss rate of 1%, the probability of a successful reconstruction of the message is only approximately 13.4%. If every information packet is sent twice, i.e. 400 total packets, the probability of a successful reconstruction of the message increases to approximately 98.2%. In accordance with an advantage of the present invention, by using a modified RS code to derive redundant packets, only 5 extra packets, i.e. 205 total packets, need to be sent to achieve the same approximate 98.2% successful reconstruction probability. Thus, the present invention provides an improvement over conventional methods, which utilize additional error correction and detection capabilities on a per packet basis. In the present invention, Reed Solomon parity check packets **152** effectively compensate for lost information packets. As a result, redundancy and packet loss rate are minimized, and flexibility and packet recovery rate are maximized.

In accordance with the present invention, data received from an information source is encoded into data blocks at the broadcast server. Each data block is then parceled into one or more messages so that each message can be parceled into information packets **154**. Each data packet is accompanied by a message identifier and a sequence number. As described in detail above, all packets which belong to the same message contain the same message identifier. The sequence number denotes the position of the data packet inside the message. Some packets will also be accompanied by information regarding the total number of packets belonging to a message. When enough packets arrive at the user receiver **32**, they will be reassembled into the original message by the communications server **38** in the message server design **18** as explained in detail below.

Referring to FIG. **16**, in accordance with the present invention, a Reed Solomon code is computed down the columns of the block of data packets, thereby creating Reed Solomon parity-check packets. The most general case (n,k) is adopted where

$$1 \leqq n \leqq 255 \tag{1}$$

$$1 \leqq k \leqq n \tag{2}$$

where k=number of information packets generated by parceling the input message,

n=total number of transmitted packets.

The total number of transmitted packets is determined based on the degree of protection requested. By allowing for the arbitrary combination of n and k, maximal flexibility is achieved. In particular, n and k are chosen during run-time, instead of design-time. For example, (255,223), (255,251), (7,3), (16,1) Reed Solomon codes, used column-wise are all possible combinations for generating Reed Solomon parity-check packets. In a typical operation, by using a (255, 223) Reed Solomon code column-wise, 32 parity-check packets are generated for a group of 200 information packets to be transmitted. Thus, even if 32 arbitrary packets out of 232 total data packets were lost during transmission, a successful reassembling of the information can still be achieved at the receiver end.

In accordance with the present invention, to minimize the number of lost messages, the information packets are sent with redundancy using a method based on Reed-Solomon code to derive Reed Solomon parity-check packets. Utilizing an 8-bit Reed-Solomon code, the maximum number of data packets (including both information packets and Reed-Solomon parity-check packets) is 255. There is no limitation on the number of symbols in each data packet as long as they are acceptable by the wireless carrier.

In accordance with the present invention, the modified RS code encodes the data over a Galois Field GF(2^8) (hereinafter GF(256)) whose field elements are represented by their coordinates with respect to the canonical basis $\{1, a, a^2, \ldots, a^7\}$ where a is a root of the primitive monic polynomial:

$$f(x)=x^8+x^4+x^3+x^2+1 \tag{3}$$

Parity-check packets are generated by encoding k data packets column-wise in accordance with the following generating polynomial g(x) equation:

$$g(x) = \prod_{l=1}^{P} (x + a^l) \tag{4}$$

where g(x)=generating polynomial

a=primitive element of GF(256)

p=number of parity check packets

Multiplication and inversion in GF(256) are implemented by table lookup or by algorithm depending on performance requirements.

In the preferred embodiment, the encoder for encoding k data packets column-wise is a software simulation of polynomial division using linear feedback shift register (LFSR), with n and k being changeable. The coefficients of the generator polynomial g(x) are saved in the order of ascending power. Alternatively, the LFSR may be implemented in hardware, with n and k fixed. (See William Wesley Peterson, "Error Correcting Codes", Edition One, pg. 150.)

A series of data packets including both information packets and parity-check packets are formed. The number of symbols in each data packet is limited only by the wireless broadcast system. In accordance with the present invention, no extra error correction is added to each data packet.

The number of parity-check packets, n-k, must be in the range [1, 254] and the number of erasures, i.e. errors whose locations are known, must be in the range [0, n-k]. The erasure locations must be all distinct and sorted in ascending order. In the present invention, RS error correction is performed on each column. Each error in the column corresponds to a lost packet. Since it is known which packet is lost, the locations of all errors prior to RS decoding are known. Thus, in accordance with an advantage of the present invention, the location of the errors is known before RS decoding, thereby providing for maximal error correction. In contrast, conventional applications of RS attempt to find both the magnitude and location of an error.

As shown in FIG. **16**, each data packet (including information packets and RS parity-check packets) is parceled into

many codewords. The length of each codeword is 32 bits, where 21 bits are for information and 11 bits are for error correction/detection.

The data packets, i.e. information packets and parity-check packets, are then transmitted to the message server unit via the user receiver. FLEX™ provides information regarding whether the packets were correctly received or not. As a result, any error locations are detected prior to applying RS decoding. Decoding is then implemented by syndrome evaluation with known error locations. (See Hasan, Bhargava, and Le-Ngoc, "Reed-Solomon Codes and Their Applications", pg. 79–81.)

In accordance with the present invention, the number of information packets k and the number of Reed-Solomon parity-check packets p can be arbitrarily chosen depending on the transmission condition and the desired accuracy rate. The only condition is that the number of information packets k and the number of parity-check packets together total no more than 255. The restriction

$$p+k \leqq 255 \tag{5}$$

is imposed by the use of the finite field GF(256). As stated earlier, each data block will thus first be split into several messages so that each message can be split into k packets that satisfy the above restriction. Up to p packets can be lost without compromising successful reconstruction of the message. In accordance with the present invention, even if some data packets are lost, the full message can be recovered using the redundancy data packets generated by the present invention.

Referring to FIG. **17**, a flow chart **160** of the algorithm for deriving RS parity-check packets is illustrated. The data block is initially parceled into one or more incoming messages (step **162**), and the messages are then parceled into k information packets **154** (step **164**). The number of RS parity-checks packets p is then selected (step **166**). The information packets are then encoded column-wise with a modified RS code in accordance the generating polynomial:

$$g(x) = \prod_{l=1}^{P} (x + a^l)$$

and parity-check packets are generated (step **168**). The data packets, which include information packets and RS parity-check packets, are parceled into codewords (step **170**). After the data packets have been parceled into codewords, error correction/detection is performed on the codewords (step **172**). The data packets are then transmitted to the users (step **174**).

At the user end, the number of codewords which have error(s) is counted (step **176**). Then it is determined whether each packet has any errors (step **178**). If a packet does not have an error, then it is saved (step **180**). However, if a packet has one or more errors, it is discarded (step **182**) and the present invention-waits for more packets (step **188**). When there are enough packets (step **184**), a message is assembled (step **186**). If not, the present invention waits for more packets (step **188**). Finally, when there are enough messages, the data block is assembled (step **192**).

d. Compression/Bandwidth Optimization

FIG. **18**(*a*) is a flow chart of an algorithm for data compression which combines Huffman compression and dictionary-based compression. In accordance with the present invention, the data blocks are compressed at the central broadcast server **34** end prior to transmission so that maximum amounts of information in compressed or bandwidth reduced form can be transmitted to the selected user or users. As discussed in detail below, at the user end, the data blocks are correspondingly decompressed (FIG. **18**(*b*)).

In the preferred embodiment, the current compression algorithm for English language articles saved in ASCII text format combines the Huffman compression and the dictionary-based compression, such as LZ77 and LZ78 based algorithms. In operation, as the compression algorithm scans the input texts, it not only tries to search for the next item in the previously seen text, but also tries to search for the next item in a static Huffman dictionary, and it chooses a method which produces a better result. After the data is received at the user end, it is correspondingly decompressed.

In particular, referring to the algorithm **200** for implementing data compression in FIG. **18**(*a*), the Huffman dictionary is loaded from the disk storage, the address pointer is positioned to the start of the uncompressed input data in memory and a memory buffer for storing the compressed output data is allocated (step **202**). Next, it is determined whether the address pointer is moved to the end of the data input (step **204**). If so, bit b=1 is written to the output data and the end-of-data token from the Huffman dictionary is written to the output data (step **206**) and the compression routine is done (step **208**). If in step **204**, it is determined that the address pointer is not at the end of the input data, the compression algorithm scans the input texts, searching for the next item in the previously seen text (step **210**) and the static Huffman dictionary (step **212**), and chooses the method which produces a better result (step **214**).

In particular, in step **210**, the data is compressed using the previously seen text. A token T**1** is generated by comparing the input data at the input pointer to the previous input data. T**1** denotes an index to the previously seen data that has the maximum length match with the current data. L**1** correspondingly denotes this maximum length.

In step **212**, the data is compressed using the Huffman dictionary which was loaded in step **202**. A token T**2** is generated by looking for the maximum match of the input data at the input pointer to entries in the Huffman dictionary. T**2** denotes an index to the dictionary entry for the maximum match. L**2** correspondingly denotes the length of the match.

In step **214**, the optimum result (T,L) from (T**1**,L**1**) or (T**2**,L**2**) is chosen depending on which is larger, L**1** or L**2**. If (T**1**,L**1**) is chosen, b is set to 0 (b=0), else b is set to 1 (b=1). b is initially written to the output data followed by the optimal result (T,L). The input data pointer is then advanced by L bytes.

After the data is received at the user end, it is correspondingly decompressed in accordance with the algorithm **220** illustrated in FIG. **18**(*b*). The Huffman dictionary is initially loaded from the disk storage, the address pointer is positioned to the start of the compressed input data in memory and a memory buffer for storing the decompressed output data is allocated (step **222**). One bit from the input data is read and saved in b (step **224**). Next, it is determined whether b=0 (step **226**). If so, the data is decompressed using the previously seen text (step **228**). The next token (T,L) is initially retrieved, followed by L bytes of decompressed data from the output buffer at a location denoted by T. The retrieved bytes are denoted by txt, which are then written to the output buffer (step **230**). The input data pointer is then advanced by the length of the token (T,L) in bits. The program then returns to step **224** and repeats the steps until the Huffman end-of-token is detected (step **232**).

If, in step **226**, b is not set to 0, it is determined whether the next token is the Huffman end-of-data token. If so, decompression has been completed (step **234**). If not, the data is decompressed using the Huffman dictionary (step **236**). The next token (T,L) is retrieved, followed by L bytes of decompressed data from the Huffman dictionary using T as an entry into the dictionary. The retrieved bytes of data are denoted by txt, which as noted previously, is written to the output buffer (step **230**). The input data pointer is advanced by the length of the token (T,L) in bits and returns to step **224**.

e. Differencing

FIG. **19**(*a*) is a flow chart of an algorithm **240** for data compression utilizing differencing. In accordance with another advantage of the present invention, a differencing algorithm **240** is additionally used to compress the coded data, thereby significantly reducing the number of bytes sent with each transmission. In particular, a dictionary-based compression algorithm, such as LZ77 and LZ78 based compression, can be adapted for this application. File two is described with reference to file one in a minimum number of bytes. In such an algorithm, file one is used as the dictionary.

In particular, the precomputed standard hash table HT for file 1, the dictionary file, is loaded from mass storage (step **242**). The minimum match length L from the length used in creating the hash table HT and the maximum match length U from the limits on contiguous data block transmission size are set. The memory address pointer to the stream of input data (file 2) to be compressed by differencing with file 1 is retrieved and a memory buffer for the compressed output data is allocated. The algorithm **240** next determines whether the end of the input data has been detected (step **246**). If so, the compression is complete (step **248**). If not, the hash value H of the next input data substring of length L bytes with the same hashing algorithm used to compute HT is calculated (step **250**). The optimal match length ML is then set to 0 and the optimal position MP is set to −1 (step **252**). For each position P in HT corresponding to H, the best match length PML at position P in file 1 such that

$$L<=PML<=U$$

is determined (step **254**). If PML is greater than ML, then ML is set such that ML=PML and MP is set such that MP=P. If in step **256**, ML=0, the bit value 0 is written to the output buffer (step **258**). The byte at the current input buffer pointer is written to the output buffer and the input buffer is advanced by one byte. The algorithm **240** returns to step **246** and continuously iterates until the end of the input data is detected (step **248**).

If in step **256**, ML is not equal to 0, the bit value 1 is written to the output buffer (step **260**). The optimal match length ML and the optimal match position MP are written to the output buffer. The input buffer pointer is then advanced by ML bytes. The algorithm **240** returns to step **246** and continuously iterates until the end of the input data is detected (step **248**).

As discussed in detail below, at the user end, the data blocks are correspondingly decompressed in accordance with the algorithm **262** illustrated in FIG. **19**(*b*). The dictionary file, file 1, is initially loaded from mass storage (step **264**). The memory address pointer to the stream of compressed input data and retrieved and the memory buffer for the decompressed output data is allocated. It is next determined, whether the end of the input data has been detected (step **266**). If so, the decompression routine is complete (step **268**). If not, one bit b from the input buffer is read (step **270**). It is then determined whether b=0 (step **274**). Is so, one byte from the input buffer is copied and written to the output buffer. The input buffer pointer is then advanced by one byte. The algorithm **262** returns to step **266** and continuously iterates until the end of the input data is detected (step **268**).

If in step **274**, b does not equal 0, the match length ML and the match position MP is retrieved from the input buffer (step **278**). ML bytes are copied from file 1 at position MP to the output buffer. The input buffer pointer is advanced by the sizes of ML and MP in bytes. The algorithm **262** returns to step **266** and continuously iterates until the end of the input data is detected (step **268**).

f. Wireless Data Format Encoding

Where the method of transmission is paging, all outgoing messages are preferably encoded to 7⁄8 bit data or true 8 bit data for broadcast over paging networks. After the data is received at the user end, it is correspondingly decoded.

With respect to VBI and satellite transmission, all outgoing messages are preferably encoded to true 8 bit data.

g. Addresses

In accordance with the present invention, outbound data will be segmented and sent to the user by way of the user receiver **32** utilizing common and unique addresses. Addresses are numbers used by wireless receiving devices to identify messages targeted to a user. Addresses are usually stored in programmable read only memory (PROM) in the receiver hardware **32**. If the address to which a message is transmitted matches a address stored in the receiver **32**, then the receiver **32** will process the message. Otherwise, the message will be ignored. In a typical configuration, general "basic services" are wirelessly transmitted on global common addresses, electronic mail and point-to-point messages are transmitted on personalized or unique addresses, and combined premium services and pay-per-view events are grouped together and transmitted on common addresses. Alternatively, the combined premium services and pay-per-view events may be sent on unique addresses as well.

h. Request for Additional Services

The central broadcast server **34** additionally includes telephone and/or modem interfaces for receiving remote request from users to obtain additional or modify existing services. For example, a user from a personal computer **14** or other computing device, can request additional services or modify existing services by telephoning or modeming the central broadcast server **34**, which automatically and wirelessly transmits the new or modified services. Modification of subscribed services may also be performed via the Internet and World Wide Web.

i. Simultaneous Wired Transmission

In accordance with an alternate embodiment of the invention, as explained in detail below, the information provided from the information sources **12** and transmitted to the central broadcast server **34** to be consolidated in accordance with the present invention and then transmitted wirelessly nationwide to personal computers **14** and other computing devices as described in detail above can also be sent simultaneously via a wired connection to the same personal computers **14** and computing devices having Internet/World Wide Web access (direct or via on-line service providing Internet and Web access). In particular, the data processed at the central broadcast server **34**, in addition to being transmitted wirelessly, is simultaneously made available through wired connection to a specific web site on the Internet. A user can thus connect to the Web via the Internet and receive information through wired means.

Receiving Means

Referring to FIG. **1**, a user receiver **32**, connected to a personal computer **14** or computing device, receives wireless transmissions sent by the central broadcast server **34**. The user receiver **32** preferably includes an Industry-Standard Architecture (ISA) board with a I C interface to an external wireless receiver and utilizes on-board POCSAG, Motorola's FLEX™ protocol or other wireless receiving device receiving and decoding. In accordance with an advantage of the present invention, Motorola's FLEX™ decoding allows for upgradeability to future receiver protocols without requiring replacement of the internal ISA board. The user receiver **32** also includes an indicator, such as a flashing LED, which indicates reception of incoming messages. As described in detail below, the user receiver **32** includes physical addresses for filtering data prior to being transferred to the personal computer **14**. The user receiver **32** may be a specially designed or commercially available receiving unit.

Filtering

In accordance with the present invention, filtering of information can be accomplished both at the user receiver **32** and personal computer **14** or computing device. Messages are electronically sent to nationwide and local wireless broadcast networks using both physical and virtual addresses. Physical addresses are tags which reside in the hardware portion in the user receiver **32**.

In addition to standard physical addresses, the present invention implements a virtual address as illustrated in FIG. **14** and described in detail below. In particular, the virtual addresses reside in the software of the user computer **14**. Virtual addresses provide additional filtering of incoming data from the user receiver **32**. For example, a message may be received by all receivers **32**, but if the message is targeted to a specific virtual address, then only those installations in which that virtual address is activated will process the message. In accordance with an advantage of the present invention, virtual addresses may be activated and deactivated through the broadcast network, allowing for external control over the reception of services in a particular installation. It will be appreciated by those skilled in the art that information filtering can be accomplished utilizing virtual addresses only. Virtual addresses can allow for unlimited filtering of messages on the user end. However, this may increase the resource usage of the personal computer **14**. Correspondingly, information filtering can be accomplished by utilizing physical addresses only.

A higher level of filtering based on message category and content is also provided. Users can set various filters based on a variety of preferences at information category or specific content levels to allow for automated filtering of incoming information. At the category level, users can control which categories of information received from the broadcast network are processed and which are discarded. For example, if a user were not interested in sports, all sports information categories, such as baseball, football, golf, etc. can be selected for discarding. A the specific content level, a user can select which subcategories of information within a particular information category will be processed. The user selectable subcategories depend on the type of information contained in that category. Subcategories may include, but are not limited to, source providers for headline news stories, specific industry segments (e.g., electronics, computers, communications, industrial, etc.) for business news, specific teams for sports categories, particular states and games for lottery results, and stocks for which quotes are displayed. For example, a user that wishes to have scores displayed only for baseball games involving the New York Yankees or New York Mets can set the filter for the baseball viewer to discard game results for all teams except those two.

Filtering is accomplished prior to information being transferred to the personal computer's hard drive **14**, therefore conserving the personal computer's resources. Referring to FIG. **14**, a flow chart of an algorithm for message processing using filtering in accordance with the present invention is illustrated. An incoming message from the central broadcast server end **34** after processing as described above is applied to the receiver hardware **32** (step **200**). Physical address filtering in the receiver hardware is then used to determine whether the message should be passed on for further virtual address filtering (step **202**). If the message passes physical address filtering, the message is applied to virtual address filtering (step **204**). Otherwise, the message is disregarded (step **206**). Virtual address filtering is then used to determine whether the message should be passed (step **208**) on for further message content filtering (step **210**). If not, the message is disregarded step **212**). Message content filtering then determines (step **214**) whether the message should be stored in the message database (step **216**) for further processing and transmission to the user or disregarded (step **218**).

The process of targeting data to an user utilizing real and virtual addresses is illustrated in FIG. **15**. Data blocks are built in the information gateway **134** and all applicable real and virtual addresses are determined based on the type of information in the data block and user subscription data from the subscriber database **130**. If a data block is to be targeted to a specific virtual address, the virtual address is inserted by the information gateway **134** into the virtual address field of the data block header and the virtual address flag is set. The wireless gateway **136** provides the interface to the wireless transmission network. It prepares data for transmission over the network and implements real addresses in the proper data frames as specified by the standard transmission protocol that is used. At the receiving end, arriving data is first filtered via real addresses in the wireless receiver **32** followed by virtual address filtering in the communications server **38**. The communications server **38** first checks the virtual address flag in the data block header. If it is not set, then the data block is passed onto the alert panel **50** for storage and display. If this flag is set, the communications server **38** determines if the virtual address in the data block header matches one in the virtual address database. If there is a match, then the data block is passed onto the alert panel **50**. If there is no match, then the data block is discarded.

Message Server Design

Referring to FIGS. **1** and **10**, the message server design **18** includes a communications server **38**, user interface alert panel **50** and viewer server **58**.

a: Driver

As is illustrated in FIG. **10**, the driver **44** is preferably a Windows 95 driver for the wireless device hardware **42**, although another compatible device may be used as well. The driver **44** provides an interface to access received data and control the hardware **42**, as well as inform applications as to the status of the receiver hardware **42**.

b. Interface

The interface **46** for the wireless device is preferably an AmFlex DLL **46**, although another compatible device may be used as well. The interface **46** is used to pass the data received from the wireless device to the communications

server **38** for processing and distribution to other software components. It also provides a means by which the communications server **38** can program the device hardware to receive specific messages and also allows the communications server **38** to determine hardware status.

c. Communications Server

The communications server **38** receives data from the wireless device via the interface **46**, extracts the different types of data blocks (messages), passes public data blocks to the user interface alert panel **50** and processes private data blocks locally. The communications server **38** is also responsible for initializing the wireless device and maintaining the address database which determines which received messages will be processed. In addition, it provides diagnostic data on received messages for software debug purposes.

In operation, the communications server **38** is notified of incoming data packets by the driver **44** via the interface **46** through a software callback function. Once data packets are received by the communication server **38**, it recombines, decompresses, decrypts, filters via virtual addresses as previously discussed, and error corrects the data packets using techniques corresponding to the processing done at the central broadcast server **34** end. In particular, the communication server **38** initially verifies the integrity of the data packets received using common error correction techniques. After error correction, the data packets are unpacketized and entire messages are assembled. After assembly, the communication server **38** verifies once again that the integrity of the message is maintained. The message is then decrypted using the common password previously established. The data signature on the message is also checked to verify the integrity of the data. The messages are uniquely encoded so that it is known which data packet belongs to which message. The messages are stored in a database and when a complete message is formed, it is transmitted to one or more devices that are registered with the communication server **38**. As shown in FIG. **10**, the complete message may be transmitted to the user interface alert panel **50**, shown in detail in FIGS. **3** and **4** and discussed in detail below. Thus, once the data packets are successfully read off the driver **44**, the data is error corrected, decompressed, decrypted and assembled into a complete message. The communications server **38** then notifies the user interface alert panel **50**.

d. User Interface Alert Panel

Referring to FIG. **10**, the user interface alert panel **50** is the main user interface for the applications software. The user interface alert panel **50**, which appears to a user as shown in FIG. **20**, is the liaison for messages broadcast from the communications server **38** and delivered to the viewer server **20**. The user interface alert panel **50** performs all message archiving to the messages database. The main functions of the user interface alert panel **50** are (I) initialization, (ii) processing EMIT messages, and (iii) timing events. The user interface alert panel **50** is run when the user double clicks on a specific icon or selects the application from a start menu, such as the Windows 95 start menu, and is responsible for other applications, such as launching the communications server **38** and viewer server **20** and passing messages received from the communications server **38** to the viewer server **20**. The user interface alert panel **50** also displays "fly-in" graphics and icon buttons to alert the user that a new message has been received, allows the user to open a viewer **48** to examine a received message by clicking on the viewer icon button for that message, and maintains the received messages database. The latter includes saving new messages in the database and deleting old messages after a certain period of time, as explained in detail below. The user also accesses the remote control **54** from the user interface alert panel **50** by clicking a remote control icon.

(I) Initialization

FIG. **21** is a flow chart of an algorithm **300** for implementing the initialization procedure for the user interface alert panel **50** in accordance with the present invention. In step **302**, during initialization, the user is prompted for database management (compress the message database). In particular, the user interface alert panel **50** will determine if there are more than a predetermined number of messages written into the database **51**. In the preferred embodiment, the predetermined number of messages is 2000+, although one skilled in the art will recognize that any number of messages may be used. If the predetermined number is exceeded, records which have been previously marked for deletion are removed from the database **51**. Marked records are typically records which have been read by a viewer and are not targeted for any of the other viewers or applications, yet physically remain in the database. These records are removed when the predetermined number of messages is met, thereby only leaving those records which need to be read.

Following database management, the databases **51** are opened for non-exclusive read/writes (step **304**). In accordance with the present invention, the three mains databases are the (a) messages database which holds all the messages, (b) SYSAPPS database or systems applications database which holds the viewer specific information such as what is executable, what needs to be run for that viewer to be launched, etc. and (c) V groups database which contains a list of all viewers, their alias names and descriptions.

The next step during initialization involves reading the tool bar initialization information from the registry keys (step **306**). In particular, the docking location of the user interface alert panel **50** is determined. The user interface alert panel **50** is dockable at all the corners of the display and can also be floated at the center. The animation defaults are also determined because in the customization for the user interface alert panel **50**, the user can turn off the fly-in sequence, buttons animated and/or sound files being played. Which winsock ports need to be used to talk to the communications server **38** and viewer server **20** are also determined at initialization.

The next step is during initialization is to launch the communications server **38** and viewer server **20** (step **308**). After the executables for the communications server **38** and viewer server **20** have been launched, the communications server **38** is logged into as a client and the viewer server **20** is logged into as a server such that each knows about the user interface alert panel **50**.

Then, buttons are created in the user interface alert panel **50** for messages marked as not read (step **310**). For example, some records in the message database **51** are not read because the user closed the user interface alert panel **50** before reading them. In accordance with the present invention, buttons are created on the user interface alert panel **50** for those messages.

Finally, the communications server **38** is queried for valid service plans which include but are not limited to E-mail, premier services and power up services (step **312**).

(ii) Process EMIT Messages

FIG. **22** is a flow chart of the algorithm for implementing process EMIT messages procedure for the user interface alert panel **50**. A message or feed from the communications server **38** via the winsock port is initially applied to the user interface alert panel **50**. In step **1**, the user interface alert

panel **50** determines what feed type is present, i.e. whether the message is a binary, star or EMIT type feed.

A typical binary type feed is an E-mail message. The binary feed is, as discussed in detail below, decompressed into a common EMIT feed and processed as a normal feed.

A typical EMIT type feed involves common user information such as messages for football, scoreboard viewers, horoscope, lottery etc.

A typical star type feed involves a registry value change which creates or updates the appropriate registry key(s). In many cases, a star feed involves a visual change to one of the viewers **48**. For example, a star feed will create/write registry values to reflect a change in advertisement on a particular viewer **48** (step **2**). Star feeds are thus special feeds in that they can change register keys which point to bitmap files, source names, URL sources and so forth. In particular, referring to FIG. **23**, star feeds are received by the communications server **38** and passed to the user interface alert panel **50** for processing. The registry values updated by star feeds are read by other components and the changes programmed by the star feeds are then put into effect. In operation, the user interface alert panel **50** first determines if a message is a star feed by checking the message tag to determine if it contains the star feed indicator, preferably "*=". It then parses the star feed extracting the component code and the registry key values to be updated. The updated key values are then written to the registry **49** where they are accessed by other components, such as the remote control **54** and the viewers **48**. The basic structure of a star feed message is shown as follows:

FEED_TAG~V=COMPONENT_CODE~P=
REGISTRY_KEY_VALUES

where	
FEED_TAG =	the message tag code ("*=" for star feeds)
COMPONENT_CODE =	a two letter code indicating to which component the star feed applies (e.g., BB for baseball viewer, RC for remote control, etc.)
REGISTRY_KEY VALUES =	one or more sequences of the following parameters for the specified component: registry key, full file path name flag (0 or 1) if the key value contains a file name, and the registry key value.

In a typical example, bitmaps for the Internet-baseball score button are changed as well as the URL for the source:

*=~V=BB~P=Ad1;0;shared\bmps\SprtNet.bmp|TV B;0; shared\bmps\SprtNetU.bmp|Adb;0;shared\ bmps\SprtNet.bmp|ADB;0;shared\bmps\SprtNet U.bmp|Ad1U;2;http://www.sportsnetwork.com: 80

In the example, new bitmap files SprtNetU.bmp, SprtNet-.bmp and new URL http://www.sportsnetwork.com are added to the registry settings for the Baseball viewer. Where a new bitmap or other file name is specified in a star feed, the new file will have been previously received from the wireless broadcast network by the communications server **38** via the binary file transfer capability. This process is transparent to the user.

If in step **1**, it is determined that the feed is a binary type feed, the binary feed is converted to a common EMIT string format (step **3**). When the message is in the EMIT string format, a record is added to the message database by first determining the preferred viewer for the feed (step **4**) and then by parsing out the EMIT string to common viewer fields (step **6**).

In particular, to determine the preferred viewer for the feed (step **4**), a filter field from the SYSAPPS table is compared to the EMIT string (step **5**). In a typical configuration, approximately thirty viewers **48** are available and the user interface alert panel **50** determines which viewer **48** will be able to read the information. The preferred viewer is the actual icon which will fly up to the user interface alert panel **50**. To obtain a viewer alias match, the user interface alert panel **50** obtains the necessary information by looking at the systems applications (SYSAPPS) table or database. By comparing a filter field from the SYSAPPS database to the EMIT string, the user interface alert panel **50** determines which viewer **48** is the preferred viewer and which viewer **48** should fly up to the user interface alert panel **50**. For example, for a football related message, the filter fields from the SYSAPPS database would be reviewed against the football related message to determine the viewer alias match.

In accordance with the present invention, level tags further define the EMIT message so when the comparison is executed in SYSAPPS table, it can be determined which feed is for which viewer (level tag 1–5). A typical sample preferred filtering string is as follows:

$$1=N,2=N,N=*,R!=*,1=N,2=N,h=*,R!=*$$

Under the sample preferred filtering string, the level tags are 1=N, 2=N. By comparing 1=N, 2=N against the sample EMIT feed, it knows that this is a news marquee feed.

After a viewer alias match is achieved, a "Q" time flag or time flag reflecting the local time at which the message arrived at a user is created (step **6**). The EMIT string is then parsed into common viewer fields and written to a message database **51** (step **8**). The common fields include but are not limited to level tags, data and time, titles, source and content.

In the VGROUPS, there is a description for each viewer—a text typed out in a particular field. If you put the mouse over one of the buttons on the alert panel, on the bottom, it will say what this is. That description is pulled from VGROUPS (step **8**).

After the EMIT feed is recorded to the message database **51** (step **8**), the message is broadcast to the preferred viewer via the viewer server (steps **9**–**14**). Initially, it is determined whether the viewer is running (step **9**). If the viewer is running, e.g. football viewer is already running, the message is sent directly to the viewer server (step **10**).

If the viewer is not running, it is determined whether the viewer should be auto launched (step **11**). If auto-launch has been turned on for this viewer, then the viewer with message playback is launched. For example, for a football type feed, the viewer preferences are reviewed and if the user is setup for automatic launch of football, the football viewer with message playback is launched (step **12**).

If the preferred viewer is not running, the fly-in sequence comprising a) creating a fly-in animation object, b) playing a viewer specific wave file, c) animating a button on the user interface alert panel **50**, and d) placing a static button on the user interface alert panel **50**, is initiated (step **13**). In particular, a fly-in animation object is initially created. The fly-in animation object is an actual icon shown flying in from the opposite edge to the user interface alert panel **50**. In accordance with an advantage of the present invention, fly-ins alert the user that new data is available for viewing. Fly-ins are small windows displaying animated graphics representing a particular message type, e.g. E-mail, which moves from the bottom right part of the user display screen to the user interface alert panel **50** whenever a new message

of that particular type is received. If the user interface alert panel **50** is in a floating state, then the fly-in animation objects flies in from a random edge. At the same time the fly-in occurs, a viewer specific sound wave file is initiated. A button is then animated on the user interface alert panel **50**. Finally, a static button which the user can press to launch the viewer is placed on the user interface alert panel **50** (step **13**) and when depressed (step **14**), will launch a viewer with message playback (step **12**). For example, for a football feed, a fly-in animation object in the form of a football lands on top of the user interface alert panel **50**, a trumpet will play followed by a button animated on the alert panel **50**, which typically spins around and finally a static button appears on the alert panel **50**. Fly-in graphic and default sound effects reflect message type. For example, for a golf feed, a golf tournament fly-in includes an image of a golf ball and the sound of a golf ball falling into a cup.

When the static button on the user interface alert panel is pressed (step **13**), the viewer with message playback option is launched (step **12**). The message is sent to the viewer server **20** which is the actual application which physically launches the viewer **48**.

(iii) Timely Events

The user interface alert panel will periodically and automatically perform the following functions: (1) check messages that require a mark for deletion, (2) check for valid service plans, (3) check for delayed broadcasts, and (4) implement fly-in graphics for new messages, each of which is described in detail below.

(1) Check messages that require a mark for detection.

Each viewer has an entry in the SYSAPPS table that specifies the lifetime of the messages. A comparison is made to the message database and if a record needs to be marked for deletion, an "X" is placed in the MSG_READ field. In a preferred embodiment, this function is performed every 24 hours. The user interface alert panel **50** will decide, based on the information in the SYSAPPS table, how long a message should be kept for a particular viewer **48**. For example, for a football viewer, if it is only desirable to see messages 2 days old, the user interface alert panel **50** will check against that field and when 2 days has transpired, proceed to mark those records for deletion.

(2) Check for Valid Service Plans

The user interface alert panel **50** will also periodically check for valid service plans. Service plans typically dictate what kinds of feeds are available to a user. All valid plans are recorded in the registry so that other modules can read the information. The service plan checking preferably occurs at initialization and every 5 minutes thereafter. The user is also prompted with "plan expiration reminders."

(3) Check for Delayed Broadcasts

The user interface panel **50** also checks for delayed broadcasts which allow messages to be submitted for future broadcast. If a date and time has arrived for a delayed message, the MSG_READ field will be changed from "B" to "N" and a button will be placed on the user interface alert panel **50**. Delayed broadcasts are preferably checked every five minutes. The user interface panel **50** thus checks every 5 minutes for special records that need to be shown to the user and then will change a particular field in the message database—the "B" to "N" so that next time it will not rebroadcast the same message again.

(4) Implement Fly-In Graphics Means for New Messages

The user interface alert panel **50** performs fly-in graphics for new messages received from the communications server **38** if this option has been selected by the user.

e. Viewer Server

Referring to FIG. **10**, the viewer server **20** provides the means by which other components can initiate the execution of viewers **48** to display messages received from the broadcast network. This includes launching a particular viewer **48** upon command, parsing messages, and providing data extracted from the messages to the viewers **48** for display. The viewer server **20** also acts as the interface between the viewers **48** and the messages data base **51**. Functionality of the viewer server **20** is accessed through the Viewer Server Applications Programming Interface (VSAPI).

The viewer server **20** serves the global control preferences across all viewers and allows common controls to be shared by viewers requiring similar functions. In accordance with the present invention, three different classes of user interface are present. One class, the viewer class, views a particular type of information, such as baseball or electronic mail. A second class, the viewer controller, is able to start and stop the other class, the viewers class. For example, in operation, the viewer controller resembles a remote control and enables a user to turn the viewers on and off. By utilizing the remote control, a user can thus automatically bring up a baseball viewer and baseball information will be automatically displayed in that viewer. For illustrative purposes, FIGS. **24**(*a*), (b),(c) and (d) are depictions of a market scoreboard viewer, a football viewer, a newspaper viewer and stock ticker viewer, respectively.

In particular, in accordance with the feed format of the present invention, information is broken into logical information categories at the central broadcast server **34** end which matches viewers **48** which exist on the user end. The viewer server **20** ties into the viewers **48** so that an actual feed, such as an electronic mail notification feed, baseball sports feed or headline feed, is established. In accordance with the present invention, the data at the server end is classified into various formats to be able to indicate what type of a feed is present. This is accomplished by placing tags in front of various words that break it up into a type of information, such as a headline story, electronic mail story, financial story, and the like. This is the basis of the EMIT format which was described previously.

When this data arrives on the user side, the viewer server **20** reads the message including the codes and determines what type of message is being sent. Thus a viewer that is capable of displaying baseball information only receives baseball information.

In accordance with an alternative embodiment of the invention, another viewer controller which enables both incoming information as well as past information to be viewed can be utilized. Thus, for example, a user can bring up a baseball game that occurred earlier in the day. In operation, the viewer controller talks to the viewer server **20** and indicates that it wants to bring up a particular viewer. The viewer server **20** then activates and launches that particular viewer.

Preference viewers enable each of the viewers in a common user interface to show any preference information it has. The preferences viewers can be programmed to provide various kinds of information. For example, the preferences viewer can be directed to information relating to baseball teams. Another preferences viewer can be directed to stock market information. The preferences viewer can be further programmed to provide indication of events which are currently happening. For example, if the price of a stock, such as IBM, goes above a certain amount, such as $100.00 per share, a stock market crawl viewer will come up to the foreground immediately and flash a red light.

f. Remote Control

The remote control **54**, as shown in FIG. **7**, provides a user interface for opening, closing and controlling viewers (viewer management), for maintenance of user settings and preferences, and for viewing the latest broadcast network news. It also maintains a message history log which allows the user to view previously received messages. Viewer control functions include mute, pause and volume level control for the viewer audio device. The remote control **54** is launched through the user interface alert panel **50**.

g. Viewers

Viewers **18**, opened through the user interface alert panel **50** or remote control **54**, are the means by which data received from the broadcast network is displayed to the user. There are separate viewers for each of the different types of information provided over the network. Viewers **48** are capable of reading and displaying various message formats and contain preferences governing viewer actions. Viewers generally include, but are not limited, to graphics, data, sound files, and launch icons.

When each of the viewers **48** is installed, it goes through a registration process with the viewer server **20** and the viewer server **20** stores entries in the database that keep track of each of the viewers by way of the viewer table. A filtering means is provided for each viewer for filtering particular types of messages a viewer can look at. For example, a baseball viewer who wants to look at messages relating to baseball information has two filtering means-one for saving information in a database and another filter for indicating that this is the type of information that should immediately be brought up to the viewer. Thus, if a viewer is interested in Dodger baseball games, such games would instantly be brought up by the second filter. Moreover, if a viewer desires to save all of the games in the national league, the filter for saving such information would be implemented

h. User Preferences Dynamic Link Library

(DLL)

The User Preferences Dynamic Link Library (DLL) **53** allows the user to precisely specify what information is to be displayed by the Viewers **48** and how this information will be displayed and enters various related information, such as, the name of the user's Internet browser and activation codes for activating service plans. For example, the user can select the teams for which baseball or football scores will be shown, the sources of news stories, and the speed at which text is scrolled in Marquee type viewers. The User Preferences DLL **53** is accessed via the remote control **54** or through any open viewer **48**.

i. Address Reprogramming and Activation Code Parsing DLL

The address reprogramming and activation code parsing DLL **57** parses and validates service plan activation codes received over the wireless broadcast network or entered by the user and address reprogramming messages received over the network. Activation codes and address reprogramming messages control what broadcast network messages the user is allowed to receive. The code parsing DLL is used by the communications server **38**, remote control **54** (FIG. **11**) and user preferences DLL **53**.

j. Error Logging

Error Logging **55** provides a means by which all other components can record the occurrence of errors or potential problem conditions in a log file. The error log can be a valuable aid to technical support in diagnosing problems a user may encounter in running software: The log file is preferably in ASCII text format and can be viewed by any word processor or text editor, such as, Microsoft Word or Notepad.

k. Operation of Received Message Data Flow

In operation, when a new message is received from the broadcast network, the communications server **38** receives a new data block from the wireless device **42** via the driver **44** and wireless interface **46**. Depending on the data block type, the communications server **38** either processes it locally or passes it to the user interface alert panel **50**. The user interface alert panel **50** receives a data block from the communications server **38**, stores it in the messages data base **51**, displays an icon for the particular message type and generates a fly-in or other means for notification such as an audio and/or visual alert for the new message if that option is selected by the user. If the user clicks on the icon for the new message, the user interface alert panel **50** sends a command to the viewer server **20** to open the appropriate viewer **48** to display the contents of the message. Alternatively, a viewer **48** to display the new message can be launched through the remote control **54**. Upon receiving the command to open a viewer **48**, the viewer server **20** parses the message, launches the viewer **48** and passes to it the data to be displayed. The viewer **48** displays the message data received from the viewer server **20** and commands the viewer server **20** to mark the message as "read" in the data base. At any step in the process, if an error condition is detected, it is recorded in the error log **55**.

l. E-mail Alerts

FIG. **13** is a flow chart of an algorithm for generating and processing E-mail alerts in accordance with the present invention. In accordance with the present invention, a user may be instantly notified of E-mail messages without being connected to an E-mail service provider. Referring to FIG. **13**, when a user receives an E-mail message (step **240**), the user's provider sends an E-mail notification to central broadcast server (step **244**). Upon receiving this notification, the central broadcast server transmits an E-mail alert message to the user's computer through the broadcast network (step **246**). When the alert message is received by the software application in the user's computer, an animated visual and/or audio notification is triggered, or the e-mail viewer automatically pops up, depending on the mode of operation selected by the user (step **248**). In the first case, an E-mail alert icon appears on the alert panel and the E-mail viewer can be launched in the same manner as viewers for news alerts (i.e. by clicking the icon or through the remote control). An E-mail alert contains the provider ID code number and the "From" name (E-mail address of the sender). One skilled in the art will recognize that the alert is not limited to the provider ID code number and name. Rather, the E-mail alert could include a header, whole message etc. The E-mail viewer displays an icon corresponding to the provider ID, the date and time the alert was received, and the sender's E-mail address. To read an E-mail message, the user simply clicks the associated icon (step **250**) which causes the E-mail program for the particular provider to be launched (step **252**). The user's E-mail can then be retrieved through a wired connection to the E-mail provider (step **254**). One skilled in the art will recognize that E-mail alerts may be received from more than one source. For example, a user may receive an E-mail alert from an Internet E-mail provider and America On-Line or CompuServe.

User Wireless On-Line Guide

In accordance with the present invention, a wirelessly transmitted on-line guide provides a detailed schedule of when certain information, such as upcoming events, forums and chat sessions, will be transmitted. With ongoing wireless broadcasts, the information in the on-line guide is maintained up-to-date. In particular, the on-line guide can notify a user just before an event is about to happen on the Internet, therefore eliminating the need to manually keep track of upcoming events. The user indicates which events are important, and the on-line guide reminds the user via an alarm including a visual and sound alert of the events at a predetermined time, such as minutes, before each occurs. The user can then click on the event and a connection to the event's location on the Internet is made through the user's standard Internet browser and Internet service provider. Alternatively, a user can specify that a connection to the event location via the user's Internet browser and Internet service provider be made automatically when the selected event is about to occur.

URL Broadcast and Hot Links

Referring to FIG. **1**, the URL broadcast and hot links **22** back to the information source **12** is shown. In accordance with the present invention, very short notification centric messages such as news headlines from information sources **12**, such as Internet, on-line services and other information providers, are transmitted to the computer **14** by wireless transmission. A user, from a computer **14**, can make a wired connection **24** back to the information source **12** to obtain more detailed information. In accordance with the present invention, attached to each of the notification centric messages is a universal resource locator (URL) code **22** as well as related Internet address information. This allows the user, by clicking on an icon that is embedded in the message, to make a wired or wireless connection **24**, either through a modem, TC/IP or LAN-type connection, and automatically establish a link back to the information source **12**. The user can thus go directly to the specific site that the information came from. In a typical example, the specific site can be ten pages deep. Thus, in accordance with an advantage of the present invention, information sources **12** such as the Internet and other on-line services, which are typically overwhelming particularly with respect to locating a story, are easily accessible. The present invention allows a user to pinpoint and locate the specific information the user was alerted to. The user can thus hit one button which establishes the connection **24** and takes the user directly to the location where the information is located.

FIG. **12** is a flow chart of an algorithm for extracting and processing the Internet source URL for messages broadcast over the wireless communication network illustrated in FIG. **1**. In accordance with the present invention, the Internet source for a news item alert is broadcast as part of the alert message itself (step **260**). The message contains a number of tags delineating the various parts of the message. In the preferred embodiment, tags "S=" and "U=" identify the Internet source where detailed information about the news alert may be found. For those messages which always originate from the same list of default sources, the "S" tag only applies (step **264**). Following the "S=" tag is a letter code corresponding to the Internet URL. For example, the letter code for an alert from the Reuters News Service is "W". The actual URL, http://www.reuters.com, is obtained by using the letter code as an index into the alert source database of the present invention (step **266**). URL's in the alert source database may be updated by Star Feed messages in case changes in the default URL's are necessary (step **268**). For messages whose sources are not limited to a default set, the "U" tag conveys the Internet source (step **272**). Following the "U=" tag is the actual URL source of the message (e.g. U=http://www.universalnews.com). Wireless throughput is conserved by transmitting the full URL only in those cases where the source is not restricted to being a member of a fixed set. The source URL is displayed at the end of the alert message text (step **270**). A user with a wired or wireless connection to the Internet can go directly to the alert source simply by clicking the URL (step **270**). A connection to the alert source on the Internet is thus provided.

Over the Air Programming

Services received and various operational characteristics at the user end can be programmed by the central broadcast server **34** through the wireless broadcast network. This is accomplished primarily through Star Feeds and service activation/deactivation codes. Star Feeds, which have been described in detail above, are special messages which allow parameters controlling viewer operation to be modified from the central broadcast server **34**. Activation/deactivation codes determine which services a user is allowed to receive. For example, if a user subscribes to e-mail alerts, this service can be turned on for that specific user through an e-mail alert activation code message transmitted to the user site via the wireless broadcast network. Conversely, if a user stops subscribing to a service, that service can be turned off through a deactivation code message. Additionally, the capability exists for binary file transfer from the central broadcast server **34** to add new executable files or replace existing ones with newer versions. In this way, new or updated viewers can be installed directly through the wireless broadcast network.

Billing and Activation Server

Referring to FIG. **1**, users may remotely request additional services or modify existing services from the personal computer **14** or other computing device through a billing and activation server **64** which communicates with the central broadcast server **34**. By telephone or modem communication, a user can contact the billing and activation server **64** which in turn communicates with the central broadcast server **34**. Once such a request has been processed by the central broadcast server **34**, the server **34** wirelessly transmits an activation code directly to the message server **18** to activate additional or modify existing services. By matching the serial number contained in the broadcast message with the users serial number, the user software will program a receiver board in the user receiver **32** to begin receiving additional or modified services. Thus according to an advantage of the present invention, users can remotely adjust services from their personal computers **14** or other computing devices.

Simultaneous Wired Transmission

In accordance with an alternate embodiment of the invention, the information provided from the information sources **12** and transmitted to the central broadcast server **34** to be consolidated in accordance with the present invention and then transmitted wirelessly nationwide to personal computers **14** and other computing devices as described in detail above can also be sent simultaneously via a wired connection to the same personal computers **14** and computing devices having Internet/World Wide Web access (direct or via on-line service providing Internet and World Wide Web access). In particular, the data processed at the central

broadcast server **34**, in addition to being transmitted wirelessly, is simultaneously placed on Web pages on the Internet. A user can thus connect to the Web via the Internet. In operation, to access data sent by the central broadcast server **34**, a user makes a connection via the Internet to the World Wide Web server and delivers its URL request. The request is acknowledged by the Web server, which then sends the requested data to the user. Thus, a user can receive real time data/information in the form of voice, video data or a combination thereof by accessing the World Wide Web.

It will be appreciated by persons skilled in the art that the present invention is not limited to what has been shown and described hereinabove, nor the dimensions of sizes of the physical implementation described immediately above.

What is claimed is:

1. A method for transmitting data to selected remote devices, comprising the steps of:

transmitting data from an information source to a central broadcast server;

preprocessing said data at said central broadcast server, further comprising the step of:

parsing said data with parsers corresponding to said central broadcast server;

transmitting said data to an information gateway for building data blocks and assigning addresses to said data blocks;

transmitting said data blocks from said information gateway to a transmission gateway for preparing said data block for transmission to receivers;

transmitting preprocessed data to receivers communicating with said devices; and

instantaneously notifying said devices of receipt of said preprocessed data whether said computing devices are online or offline from a data channel associated with each device.

2. The method claimed in claim **1**, wherein said step of transmitting said data to said information gateway for building data blocks and assigning addresses to said data blocks, further comprises the step of building data blocks and assigning addresses to said data blocks based on information in a subscriber database.

3. The method claimed in claim **1**, wherein said step of transmitting preprocessed data to the remote receivers communicating with said devices, further comprises the step of wireless transmitting said preprocessed data to the remote receivers.

4. The method claimed in claim **3**, wherein said step of wirelessly transmitting said preprocessed data to the remote receivers further comprises the step of transmitting said preprocessed data utilizing a paging network.

5. The method claimed in claim **3**, wherein said step of wirelessly transmitting said preprocessed data to the remote receivers further comprises the step of transmitting said preprocessed data utilizing a Vertical Blanking Interval.

6. The method claimed in claim **3**, wherein said step of wirelessly transmitting said preprocessed data to the remote receivers further comprises the step of transmitting said preprocessed data utilizing a satellite system.

7. The method claimed in claim **3**, wherein said step of wirelessly transmitting said preprocessed data to the remote receivers further comprises the step of transmitting said preprocessed data utilizing an FM subcarrier, a digital carrier, an analog carrier, a cellular carrier, a GSM carrier or a PCS carrier.

8. The method claimed in claim **1**, wherein said step of transmitting preprocessed data to the remote receivers communicating with said computing devices, further comprises the step of transmitting said preprocessed data to the remote receivers by wired transmission.

9. The method claimed in claim **1**, wherein said step of preprocessing data at said central broadcast server, further comprises the step of attaching to said preprocessed data an Internet address location of said preprocessed data for providing to users of said devices an automatic connection back to said information source for obtaining further information related to said preprocessed data.

10. The method claimed in claim **9**, wherein said Internet address location is a Uniform Resource Locator.

11. The method claimed in claim **9**, wherein said step of attaching to said preprocessed data an Internet address location of said preprocessed data for providing to said users an automatic connection back to said information source for obtaining further information related to said preprocessed data, further comprises the step of providing an automatic connection back to said information source through a user activating a single function on said device.

12. The method claimed in claim **11**, wherein said single function comprises a single click on said device.

13. The method claimed in claim **9**, wherein said connection back to said information source for obtaining further information related to said preprocessed data is an automated wired connection.

14. The method claimed in claim **9**, wherein said connection back to said information source for obtaining further information related to said preprocessed data is an automated wireless connection.

15. The method claimed in claim **9**, wherein said step of attaching to said preprocessed data an Internet address location of said preprocessed data for providing to said users an automatic connection back to said information source for obtaining further information related to said preprocessed data, further comprises the step of determining at said central broadcast server said Internet address location from said information source.

16. The method claimed in claim **9**, wherein said step of attaching to said preprocessed data an Internet address location of said preprocessed data for providing to said users an automatic connection back to said information source for obtaining further information related to said preprocessed data, further comprises the step of attaching said Internet address location to said preprocessed data.

17. The method claimed in claim **9**, wherein said step of attaching to said preprocessed data an Internet address location of said preprocessed data for providing to said users an automatic connection back to said information source for obtaining further information related to said preprocessed data, further comprises the step of transmitting said Internet address location with said preprocessed data to said device.

18. The method claimed in claim **9**, further comprising the step of extracting said Internet address location from said preprocessed data at said device.

19. The method claimed in claim **9**, further comprising the step of displaying said Internet address location with said preprocessed data to said users such that said users can with a single action related to said Internet address location obtain additional information from said information source.

20. The method claimed in claim **9**, further comprising the step of launching an Internet browser and passing said Internet address location to said browser for automatic connection back to said information source.

21. The method claimed in claim **9**, wherein said Internet address is a proprietary on-line addressing scheme.

22. The method claimed in claim **1** wherein said step of instantaneously notifying said devices of receipt of said

preprocessed data whether said devices are online or offline from the data channel associated with each device, further comprises the step of providing at least one alert which when activated allows display of data.

23. The method claimed in claim **22**, wherein said at least one alert comprises a visual alert.

24. The method claimed in claim **22**, wherein said at least one alert comprises an audio alert.

25. The method claimed in claim **22**, wherein said at least one alert is related to a type of information present at computing device.

26. The method claimed in claim **1**, wherein said step of instantaneously notifying said devices of receipt of said preprocessed data whether said devices are online or offline from the data channel associated with each device, further comprises the step of providing an alert panel on a display of each of said devices for providing alerts to users of said devices.

27. The method claimed in claim **26**, wherein said step of providing the alert panel on a display of said devices for providing alerts to said users, further comprises the step of displaying fly-in graphics and icon buttons to alert said users that new data has been received by said devices.

28. The method claimed in claim **1**, wherein said step of preprocessing said data at said central broadcast server further comprises the step of deriving redundant data packets for transmission to users of said devices.

29. The method claimed in claim **28**, wherein said step of deriving redundant data packets for transmission to said users further comprises the step of parceling a data block into at least one incoming message.

30. The method claimed in claim **29**, wherein said step of deriving redundant data packets for transmission to said users further comprises the step of parceling said messages into information packets.

31. The method claimed in claim **30**, wherein said step of deriving redundant data packets for transmission to said users further comprises the step of selecting a number of parity-check packets p.

32. The method claimed in claim **31**, wherein said step of deriving redundant data packets for transmission to said users further comprises the step of encoding column-wise with a modified Reed-Solomon code for generating parity-check packets.

33. The method claimed in claim **32**, wherein said Reed-Solomon code is defined in accordance with:

$$g(x) = \prod_{i=1}^{P} (x + a^i).$$

34. The method claimed in claim **32**, wherein said step of deriving redundant data packets for transmission to said users further comprises the step of parceling said data packets into code words for transmission to said users.

35. The method claimed in claim **34**, wherein said step of deriving redundant data packets for transmission to said users further comprises the step of performing error correction and detection on said code words after said data packets have been parceled.

36. The method claimed in claim **34**, further comprising the step of assembling a data block from said code words.

37. The method claimed in claim **36**, wherein said step of assembling a data block from said code words further comprises the steps of:

counting the number of code words which have errors;

determining whether each packet has any errors;

saving packets without error;

discarding packets with at least one error; and

assembling a message when the required number of packets has been received.

38. The method claimed in claim **28**, wherein said data packets include information packets and parity-check packets.

39. The method claimed in claim **1**, wherein said step of preprocessing said data at said central broadcast server further comprises the step of combining Huffman compression and dictionary-based compression based algorithms.

40. The method claimed in claim **39**, wherein said step of combining the Huffman compression and the dictionary-based compression based algorithms further comprises the steps of:

scanning input texts;

searching for next item previously seen text;

searching for next item in a static Huffman dictionary; and

choosing said search method which produces a better result for compression.

41. The method claimed in claim **40**, further comprising the step of decompressing said compressed data.

42. The method claimed in claim **1**, wherein said step of preprocessing said data at said central broadcast server further comprises the step of utilizing a differencing algorithm for compressing said coded data, thereby significantly reducing the number of bytes sent with each transmission.

43. The method claimed in claim **1**, wherein said step of preprocessing data at said central broadcast server, further comprises the step of processing data in accordance with feed type from said information source.

44. The method claimed in claim **43**, wherein said feed type comprises binary type feeds.

45. The method claimed in claim **43**, wherein said feed type comprises common user information type feeds.

46. The method claimed in claim **43**, wherein said feed type comprises feeds for modifying registry keys which control processing of data.

47. The method claimed in claim **43**, wherein said step of processing data in accordance with feed type from said information source, further comprises the step of using tags to differentiate types of information.

48. The method claimed in claim **1**, wherein said step of instantaneously notifying said devices of receipt of said preprocessed data whether said devices are online or offline from the data channel associated with each device further comprises the step of instantaneously alerting said users to personal alerts through the use of sound, graphics, bit maps or video, wherein said user can instantaneously access information.

49. The method claimed in claim **1**, wherein said step of preprocessing data at said central broadcast server, further comprises the step of encoding said data with information relating to message parameters for filtering.

50. The method claimed in claim **1**, wherein said step of instantaneously notifying said devices of receipt of said preprocessed data whether said devices are online or offline from the data channel associated with each device, further comprises the steps of:

monitoring said transmissions utilizing multiple viewers;

filtering said transmitted preprocessed data;

post processing said preprocessed data; and

notifying said user instantaneously of receipt of filtered postprocessed data.

51. The method claimed in claim 50, wherein said step of filtering said transmitted preprocessed data further comprises the step of filtering said transmitted preprocessed data in accordance with preferences set by said user.

52. The method claimed in claim 51, wherein said step of filtering said transmitted preprocessed data in accordance with preferences set by said user, further comprises the step of setting said preferences with respect to sound, video and animation.

53. The method claimed in claim 50, wherein said step of filtering said transmitted preprocessed data further comprises the step of filtering said preprocessed data in accordance with virtual addresses.

54. The method claimed in claim 50, wherein said step of filtering said transmitted preprocessed data further comprises the step of filtering said preprocessed data in accordance with physical addresses.

55. The method claimed in claim 50, further comprising the step of controlling said viewers from said central broadcast server.

56. The method claimed in claim 55, wherein said step of controlling said viewers from said central broadcast server, further comprises the step of adding viewers from said central broadcast server.

57. The method claimed in claim 55, wherein said step of controlling said viewers from said central broadcast server, further comprises the step of removing viewers from said central broadcast server.

58. The method claimed in claim 50, further comprising the step of utilizing a remote control interface for controlling said viewers.

59. The method claimed in claim 58, wherein said step of utilizing a remote control interface for controlling said viewers further comprises the step of launching said remote control interface through a user interface alert panel.

60. The method claimed in claim 50, further comprising the steps of:

storing entries in a viewer server connected to said viewer; and

providing filtering means for filtering particular types of messages a user can look at.

61. The method claimed in claim 1, further comprising the step of activating said preprocessed data at a scheduled time.

62. The method claimed in claim 1, further comprising the step of modifying said preprocessed data instantaneously and wirelessly.

63. The method claimed in claim 62, wherein said step of modifying said preprocessed data instantaneously and wirelessly, further comprises the step of activating services wirelessly through activation codes which enable or disable services.

64. The method claimed in claim 1, further comprising the step of postprocessing said preprocessed data.

65. The method claimed in claim 64, wherein said step of postprocessing said preprocessed data further comprises the step of recombining, decoding and decompressing said preprocessed data.

66. The method claimed in claim 1, wherein said information source is an Internet access provider providing data feeds.

67. The method claimed in claim 1, wherein said information source is an online service provider providing data feeds.

68. The method claimed in claim 1, wherein said step of transmitting said data to said information gateway for building data blocks and assigning addresses to said data block, further comprises the step of building data blocks and assigning addresses to said data block based on information in a subscriber database.

69. The method claimed in claim 1, further comprising the step of displaying contextual graphics on said device to show data in a predefined format.

70. The method claimed in claim 69, wherein said predefined format is a scoreboard.

71. The method claimed in claim 1, wherein said step of preprocessing data at said central broadcast server, further comprises the step of attaching to said preprocessed data an Internet address location of said preprocessed data for providing to a user a message that causes a process or transaction on said device to occur.

72. The method claimed in claim 1, wherein said step of preprocessing said data at said central broadcast server, further comprises the step of sending said data on groups of pooled capcodes.

73. The method claimed in claim 72, wherein said step of sending said data on groups of pooled capcodes, further comprises the step of multiplexing data over multiple capcodes to be reassembled at said devices as if data were being sent over a single capcode.

74. The method claimed in claim 1, wherein said step of preprocessing said data at said central broadcast server, further comprises the steps of:

assigning data packets to a group of capcodes;

transmitting said data over a paging network using said group of capcodes;

receiving packets at said devices on said group of capcodes; and

combining said packets from said group of capcodes into one data message.

75. A method for transmitting data to selected remote devices, comprising the steps of:

transmitting data from an information source to a central broadcast server;

preprocessing said data at said central broadcast server,

transmitting preprocessed data to remote receivers communicating with said devices;

instantaneously notifying said devices of receipt of said preprocessed data whether said devices are online or offline from a data channel associated with each device, further comprising the steps of:

monitoring said transmissions utilizing multiple viewers;

filtering said transmitted preprocessed data;

post processing said preprocessed data; and

notifying said devices instantaneously of receipt of filtered postprocessed data utilizing a remote control interface for controlling said viewers by launching said remote control interface through a user interface alert panel.

76. The method claimed in claim 75, further comprising the steps of:

storing entries in a viewer server connected to said viewer, and

providing filtering means for filtering particular types of messages a user can look at.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 7,035,914 B1
APPLICATION NO. : 09/350467
DATED : April 25, 2006
INVENTOR(S) : Payne et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Col. 33, line 29, please change "block" to -- blocks --;

Col. 33, line 33, please delete "computing";

Col. 33, line 45, please change "wireless" to -- wirelessly --;

Col. 33, line 66, please delete "remote";

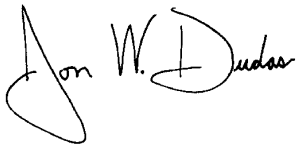
Col. 33, line 67, please delete "computing";

Col. 34, line 1, please delete "remote";

Col. 35, line 11, please change "computing" to -- said --.

Signed and Sealed this

Fourteenth Day of October, 2008



JON W. DUDAS
Director of the United States Patent and Trademark Office

US007035914C1

(12) **EX PARTE REEXAMINATION CERTIFICATE** (9507th)

United States Patent
Payne et al.

(10) **Number: US 7,035,914 C1**
(45) **Certificate Issued: Feb. 8, 2013**

(54) **SYSTEM AND METHOD FOR TRANSMISSION OF DATA**

(75) Inventors: **John M. Payne**, Newport Beach, CA (US); **Tim Von Kaenel**, Coto de Casa, CA (US); **Jeffrey Wang**, Horsham, PA (US); **Jeffrey Odell**, Newport Beach, CA (US); **David Starr**, New York, NY (US); **Jason Katz**, New York, NY (US)

(73) Assignee: **SimpleAir, Inc.**, Plano, TX (US)

Reexamination Request:
No. 90/009,906, May 3, 2011

Reexamination Certificate for:
Patent No.: **7,035,914**
Issued: **Apr. 25, 2006**
Appl. No.: **09/350,467**
Filed: **Jul. 9, 1999**

Certificate of Correction issued Oct. 14, 2008.

Related U.S. Application Data

(63) Continuation of application No. 08/788,613, filed on Jan. 24, 1997.

(60) Provisional application No. 60/026,471, filed on Sep. 23, 1996, provisional application No. 60/014,735, filed on Apr. 1, 1996, provisional application No. 60/014,341, filed on Mar. 29, 1996, provisional application No. 60/010,651, filed on Jan. 26, 1996.

(51) **Int. Cl.**
G06F 15/16 (2006.01)
G08B 5/22 (2006.01)

(52) **U.S. Cl.** **709/219**; 709/236; 340/729

(58) **Field of Classification Search** ..... None
See application file for complete search history.

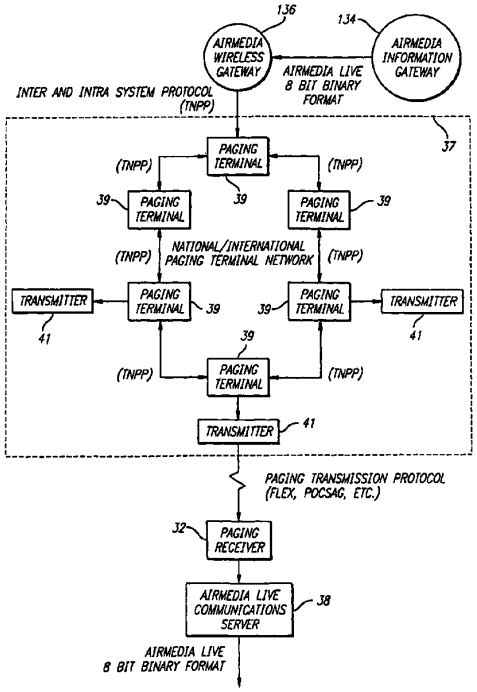
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/009,906, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — David England

(57) **ABSTRACT**

A system and method for data communication connecting on-line networks with on-line and off-line computers. The present system provides for broadcast of up to the minute notification centric information thereby providing an instant call to action for users who are provided with the ability to instantaneously retrieve further detailed information. The notification centric portions of information is wirelessly broadcast to wireless receiving devices which are attached to computing devices. Upon receipt of the information at the personal computer, the user is notified through different multimedia alerts that there is an incoming message. Wirelessly broadcasted URL's, associated with the data, are embedded in data packets and provide an automated wired or wireless connection back to the information source for obtaining detailed data.



ADD-174

EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

NO AMENDMENTS HAVE BEEN MADE TO THE PATENT

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-20**, **22-25**, **43-45**, **47-51**, **54**, **64** and **66-70** is confirmed.

Claims **21**, **26-42**, **46**, **52**, **53**, **55-63**, **65** and **71-76** were not reexamined.

* * * * *

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on April 3, 2015, the foregoing NONCONFIDENTIAL BRIEF FOR DEFENDANT-APPELLANT was electronically filed with the Clerk of Court using the CM/ECF System, which will send notice of such filing to the following registered CM/ECF user:

DOVEL & LUNER LLP

201 Santa Monica Boulevard, Suite 600

Santa Monica, California 90401

By: /s/ Bill Trac
Bill Trac

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing Brief for Defendant-Appellant complies with the type-volume limitations of Fed. R. App. P. 32(a)(7)(B). The brief was printed using 14-point Times New Roman font. The word-processing system used to prepare the document, excluding the Table of Contents, Table of Authorities, and Certificate of Interest, calculates that it contains 13,592 words.

/s/ Bill Trac
Bill Trac